The 200 Investment Banking Interview Questions & Answers You Need to Know

Breaking INTO Wall Street

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Introduction

This guide has one purpose: to help you answer the most important "fit" and technical questions in investment banking interviews. It is quite lengthy, but there's no fluff. We tell you what's important and what you need to say – nothing more and nothing less.

Most other guides suffer from several problems:

1. The information is **not investment banking-specific**. Do you think you're going to get a question about "Why you're interested in this position?" I'll tell you why you're interested – because you want to make a lot of money!
2. The information is **out-of-date, wrong or incomplete** (see: *The Vault Guide*). These days, interviewers assume you know the basics – like how to value a company – and go beyond that with advanced questions that require *thinking* more than memorization.
3. **No answers are provided**, or there's minimal direction (see: *The Recruiting Guide to Investment Banking*). Of course, you shouldn't memorize answers word-for-word, but it's helpful to have an idea of how you might structure your answers.
4. The questions **do not apply to interviewees from diverse backgrounds**. If you worked at Goldman Sachs this past summer it's not hard to convince them you're serious about finance – **but what if you didn't**? What if you're making a career transition or you're coming in as a more experienced hire? That's what this guide is for.
5. **The guides were not written by bankers**. If you doubt my credentials, just refer to Mergers & Inquisitions, where I've written over 100 detailed articles on investment banking, private equity, and other topics in finance. The proof is in the pudding.

I wrote this guide based on my experience interviewing hundreds of candidates – both as part of my "day job" and also as part of the business that I now own. I've interviewed everyone from freshmen in college to post-MBA candidates looking to get hired in senior roles, and this guide reflects the insights I've gained in the process.

Your time is limited – so we get you the answers you need, when you need them (right now).

What follows is a list of 200 investment banking interview questions and answers, divided into different types of "fit" (personal, team / leadership, "why banking," etc.)

and technical questions (accounting, valuation, DCF, merger models and LBO models, and brain teasers).

I recommend reviewing the table of contents first and then skipping to the questions you are most in need of understanding. You can read the entire guide all at once as well – it's up to you.

In either case, though, the key is to *apply* what you're learning and test yourself. Rather than reading everything passively, try to answer each question – and then check whether or not you got it right. Do that, and you'll be several steps closer to landing investment banking offers.

Fit / Qualitative Questions

Although we'd like to think otherwise, there are no "correct" answers you can use for the qualitative questions you'll get. They depend on your background and your own experience, and everyone's different.

However, there are good ways to answer and poor ways to answer. In this section, we detail the best techniques along with what you should say – and avoid saying.

Most candidates make 2 big mistakes when answering "fit" questions:

1. They fail to use **specific** anecdotes to support their points.
2. They do not **structure** their answers properly.

Whenever you're asked a generic question about "how you work in teams" or something of that nature, you need to have **anecdotes** ready to back up what you say.

You should go through this list and your resume and make sure you have stories prepared for the most common questions – you can then use those and then adapt them as necessary for any new questions you get.

Regardless of the question, you also need to **structure** it properly. Don't jump around from point to point – start with the main idea you want to get across and then support it with examples. Don't start going off on tangents about your former life in the circus or how you climbed Mt. Everest.

With the exception of the "Walk me through your resume" question, most "fit" questions should take no more than 1 minute for you to answer.

Be succinct and conversational in your tone, and you should do fine.

Analytical / Attention to Detail Questions & Suggested Answers

Analytical and quantitative questions are more common if you're a Liberal Arts major or if you haven't had finance, engineering or math experience.

Interviewers are trying to assess whether "you can count" – you don't need to be a math whiz to be a banker, but you *do* need to be comfortable with numbers and calculations in Excel.

So if you haven't majored in something quantitative or your work experience is all journalism-related, you'll want to prepare a few examples of your analytical abilities.

Even if you *have* had finance or analytical experience, you're still likely to be asked about your analytical skills – they want to test your communication abilities and make sure you can express abstract concepts clearly.

These questions are also a good chance to bring up any independent study of finance you've done, which will help your case once again.

1. I see you've done mostly journalism and research internships before. Can you discuss your quantitative skills?

You should respond by discussing *specific* times when you had to analyze numbers and/or use logic. Good examples might include: your personal portfolio, any math/science classes you've taken, any type of budgeting process you've been through, any type of research you've done that involved numbers.

2. In your last internship, you analyzed portfolios and recommended investments to clients. Can you walk me through your thought process for analyzing the returns of a client portfolio?

The key is to break everything down into steps and be very specific about what you did. So you might say that "Step 1" was getting a list of when they bought each investment and how much they invested / how many shares they acquired; "Step 2" was finding a list of when they sold each investment, and what they sold them for; and "Step 3" was aggregating this data over the years in-between for each investment to calculate the compound return.

3. Can you tell me about the process you used to analyze space requirements for the building designs you worked on this past summer?

Similar to the reasoning above, break it into steps and start by discussing how you made the initial estimates, then how you refined them and made them more exact over time while staying within budget and collaborating with your team.

4. You've been working as a lawyer for the past 3 years – what initiative have you taken on your own to learn more about finance?

You should either present a list of self-study courses or certifications such as the CFA that you've obtained, or speak about your own work studying independently from textbooks, self-study courses and other sources. Be conservative with how much you claim to know – re-iterate that you're "not an expert" but that you *have* taken the initiative to learn something on your own.

5. You were an English major – how do you know you can handle the quantitative rigor required in investment banking?

Combine the answers to questions #1 and #4 for this one – the key is to use specific examples rather than just saying, "I got a high math SAT score!" Personal financial experience, classes, self-study courses and independent study work well.

6. Can you tell me about a time when you submitted a report or project with misspellings or grammatical mistakes?

It's unrealistic to claim that you're perfect and have never done this. Instead, briefly mention a time when you made a careless mistake and then spend the *majority* of time in your answer discussing *what you learned and how you improved*, citing another specific example of how you improved the second time around.

7. What's the most number of classes you ever took at once and how well did you do in each of them?

Once again, it's best to point to something specific – "During my junior year, I was taking 5 classes at once as well as working part-time and running my business fraternity – and I still got A's in all of them."

Not everyone has a perfect answer, but try to think about the most stressful time in your academic life and use that as a reference for your answer.

State the "challenge" first, then how you responded, and then how well you did.

8. How well can you multi-task?

In keeping with our theme of specificity, give a concrete example of a time when you were working on multiple projects at the same time – work, school, or activities work equally well for this one. Also emphasize that despite the considerable demands, you pulled off everything successfully. Anything involving teamwork or collaboration is also good to use in this response.

9. Have you ever worked on a project or report that was shown to a large number of people?

A journal, student publication or anything similar could be good to mention here, as could anything shown to a client or multiple clients in your work experience or in an internship.

If you don't have something like this, the best approach is to come as close possible by saying, for example, "I haven't worked on a widely circulated publication, but I did work on such-and-such…, which required that all the details were perfect and that there were no mistakes…"

You could even cite lab or medical work – even if it wasn't widely circulated, anything requiring strong attention to detail suffices.

Background / Personal Questions & Suggested Answers

Typical background questions include inquiries about where you went to school (undergraduate and/or business school), what you majored in, and why/where you studied abroad if you've done that.

These questions are not too difficult to answer as long as you're thoughtful and have a decent rationale for what you say.

The key points: come across as an interesting person (which you should have no trouble doing) and also talk about how your experience better prepared you for investment banking.

Even if you did something seemingly unrelated, such as a Math Major, that can be turned into a good response to lead into the inevitable "Why banking?" question you'll get.

1. Walk me through your resume.

Start at "the beginning" – if you're in college, that might be where you grew up or where you went to high school. For anyone in business school or beyond, it might be where you went to undergraduate, your first job, or even where you went to business school.

Then, go through how you first became interested in finance/business, how your interest developed over the years via the specific internships / jobs / other experiences you had and conclude with a strong statement about why you're interviewing today.

Aim for 2-3 minutes – if you go on longer than this, the interviewer may get bored or impatient. **Also, do not look at your resume when going through your "story."**

The 4 most important points:

1. Be chronological.
2. Show how each experience along the way led you in the direction of finance.
3. State why you're here interviewing today.
4. Aim for 2-3 minutes.

What are the most common mistakes with the "Walk me through your resume" question?

1. Going out of order chronologically.
2. Too much exposition – don't start off by saying, "I've had a lot of great experiences."
3. Being too short (under 1 minute) or too long (over 5 minutes).
4. Not sounding certain you want to do banking/finance.
5. Listing your experiences rather than giving a logical transition between each one.

2. Why did you attend [Your University / Business School]? I'm sure you had many options. / Why did you *transfer* to [University Name]?

Say that you looked at a lot of places, but settled on wherever you went due to its excellent academic reputation, its strong business/finance/economics program, or something of that nature. If you were interested in something specific it offered (e.g. you were an athlete and went to Stanford on scholarship, or you went to UChicago because of its excellent liberal arts program) you can mention that as well. Try to sound like you made a thoughtful decision rather than deciding randomly.

If you transferred elsewhere, a similar strategy applies but make sure to emphasize it was for academic reasons. For example, *don't* say you wanted to get out of Massachusetts and move to southern California for an "improved lifestyle!"

3. I noticed you studied abroad in [Location]. Can you tell me about that experience and why you went there?

Emphasize you did a lot academically rather than partying 24/7. Many study abroad programs do, in fact, involve partying 24/7, but you don't want to admit this. You can mention something about the fun you had, trips you went on, and anything interesting you did (climbing Mt. Fuji, starring in a Korean soap opera, excavating ruins in Troy, etc.) but don't over-do it and make them think you did nothing constructive while you were there. Think "Work hard and play hard" for this one.

4. Why did you major in [Your Major]?

If it was something related to business/economics, you can discuss your interest in those fields; for other majors, you can emphasize how you liked the challenge and/or had a personal interest in the field, but also took the time to learn the basics of business/finance on your own.

5. Where else did you apply for school? Did you get in anywhere else?

You applied to a number of top schools and got in at other places, but you went through a careful decision-making process and settled on your school for a very good reason.

Show that you're "in-demand" by others and you always become more attractive – whether it's to the bank you're interviewing at or to the schools you're applying to.

6. I see you wrote here that you're fluent in [Language]. Can you tell me about your most recent internship in [Language]?

Be prepared for this if you list any common languages on your resume (Spanish, French, Italian, German, Chinese, Japanese, etc.) or if you happen to "get lucky" and your interviewer is a native speaker in one of the languages you've listed.

I would suggest some practice discussing your work experience *in* whatever language(s) you've listed and making sure you can speak intelligently, at least briefly, about what you've done.

If you really don't know much, just tell them upfront rather than making a fool of yourself and trying to talk about EBITDA when you don't know the word for it – I speak from experience on this one.

7. What do you do for fun?

Obviously, don't say anything illegal or questionable/controversial. If you have anything interesting or not very common (hang gliding, directing movies, bungee jumping) you should bring that up. Otherwise, just be honest and if you really like watching football (*North American football* for international readers) or other sports, just talk about your interest in those.

8. What was your favorite class in college / business school?

I would not say anything economics/finance-related – it sounds too artificial. Tell them about something you were actually interested in – even if it's not directly related to banking. They want to see who you are as a person, not whether or not you know all the Excel shortcuts in the book.

9. What are your favorite movies / books?

There are 2 common mistakes:

1. Saying something like *Wall Street*, *American Psycho*, or *Liar's Poker* that indicates you're a boring person.
2. Saying something like *Harry Potter* that indicates you're borderline illiterate.

Pick something in the middle – above pop literature/film but not something that has to do with finance specifically. That just sounds weird.

10. Tell me something interesting about you that's *not* listed on your resume.

Again, don't say anything illegal/inappropriate – use common sense. Talking about that trip to Easter Island or your Brazilian Jiu-Jitsu championship both work well.

"Career Changer" Questions & Suggested Answers

You probably weren't thinking about being an investment banker since age 5.

But if you've been in an unrelated industry for awhile, you need to be well-prepared for "Career Change" questions.

A variant of "Why banking?" questions, "Career Changer Questions" ask why you're trying to switch industries, why you picked an unrelated major and have now changed your mind, or even why you're making a move within finance.

It's best to point to a specific anecdote or someone who sparked your initial interest in finance – assuming you have a story or person in mind.

But even if you don't, there are "generic" responses that can work well.

1. You've had tons of engineering experience and you've worked at many tech companies. Why do you want to be an investment banker now?

Talk about how you dislike the limited advancement opportunities and how your work didn't affect the world at large – only what that specific company was doing. You want to do finance because you like the *business* aspect of technology more than the *technology* aspect of technology and because you want to make an impact with your work and become an investor or advisor one day.

2. You've done Big 4 accounting for the past year – why would you want a job that's a lot more stressful with twice the hours?

Because your accounting work was boring and mundane, and because there were limited advancement opportunities. Finance is faster-paced and you've realized that after speaking with a lot of friends and doing your own research that it's just more suited to your personality.

3. I see you've practiced law at Wilson Sonsini for the past 4 years – if you've been there that long, you're probably on Partner-track by now. Why would you want to leave a lucrative career in law and go back to being an entry-level Associate in banking?

Emphasize how business people never respect lawyers and view them as nuisances rather than as a critical part of the team – as a banker, you'd be making deals happen and actually advising companies rather than just proofreading documents and doing "Find-and-Replace" in Word.

Of course, you do a lot of this in banking anyway but this angle still works because bankers really *do* look down on lawyers.

4. I see you worked at McKinsey one summer and then went to Citi investment banking the next year. Are you sure you want to do investment banking?

Yes. Although you worked at McKinsey, you realized you didn't like consulting because of the wishy-washy nature of the work (making reports and billing by the hour rather than billing by the result) and the constant travel and lack of quantitative skills/learning.

You enjoyed your Citi internship much more and realized you wanted to be in banking rather than consulting.

5. Wow. I must be honest, I rarely see people who have accomplished as much as you have at your age. You sold your own company for over $1 million within 2 years of starting it, and became a leading real estate investor in Asia at the same time. Why would you ever want to work for other people in banking if you've been so successful on your own?

You don't view things in those terms. Although you did well, there's always room to learn and banking would be a great learning opportunity for you. You've spoken with many friends in the industry and have been impressed by what you've heard, and you want to broaden your experience and knowledge so that you can move into higher-stakes business.

6. You've worked at a few prop trading firms and also in Sales & Trading. They get paid pretty well and work market hours – so they have it a lot better than us. Why would you want to switch to investment banking?

You didn't like the culture of trading, and wanted to have more of an impact by advising companies on major strategic decisions rather than just making small trades and investments each day. Banking excites you more because of the broader range of opportunities and experiences it gives you.

Commitment Questions & Suggested Answers

"Commitment Questions" are tricky to answer, because the tendency is to come across either as too unrealistic or too uncertain.

If you're interviewing for an Analyst position, you don't want to say you're 100% certain you'll be a banker for life – but you should say it's what you're most interested in doing, and that you do have plans to stay in finance or business.

MBAs will need to show more commitment and assure the interviewer they are serious about making a career out of it.

Common questions on this topic include where else you're interviewing, why you've switched careers in the past and testing the old "Why banking?" question again in slightly different forms, just to make absolutely certain you're committed.

1. Where else are you interviewing? Is it just banking? Consulting? Other companies?

Just banking. You're not interested in consulting / other options and don't want to waste recruiters' time.

You need to say this even if you're so uncertain that you're deciding between opening a zebra ranch, going on a spiritual journey to Nepal, going back to McKinsey or starting a laundromat with your roommate's uncle.

2. Are you mostly interviewing at larger banks like us? What kinds of options within banking are you considering?

Mostly larger banks, but you have received some interest from other places so you're looking at a couple options. If you can mention specific names, that makes your answer even better.

If you're interviewing in a group like M&A or Healthcare, talk about how you're mostly speaking with similar groups to show you're serious about that one area.

3. Before you entered business school, I see you switched jobs about once a year. How do I know that you're here to stay for the long-term?

Although you switched jobs pre-MBA, it's quite common to move when better opportunity arises. However, you've done a lot of research, spoken with friends, alumni and other connections and are certain banking is for you after doing your own due diligence. You've actually looked into other career options and nothing is as attractive to you as banking.

4. Recently some Analysts and Associates have left "early" and jumped to hedge funds or private equity. If the opportunity comes up, why would you stay here instead?

You looked into investing but realized you don't like the nature of the work – there's too much due diligence and "looking at deals" rather than taking action and actually doing deals. As a result, after all your research speaking with alumni and other connections, you're set on banking.

5. Tell me about a time when you failed to honor a commitment.

The key with this type of question is to bring up a "failure" briefly and then to spend *most* of your time talking about what you've learned from it and how you've improved rather than dwelling on the failure itself.

Culture Questions & Suggested Answers

A Managing Director once told me that he had never heard a good answer for the "Why our firm?" question in an interview – but that doesn't mean you can't try.

To do so, focus on the people – whom you've met and spoken with there, what they've told you about the firm and what appeals to you.

Most banks have very similar cultures – people are nice but competitive and driven, and there's the expectation that you can do endless amounts of work for the firm.

And that's why focusing on people and anecdotes works much better than giving generic answers.

Other variants of this question include why you want to move to a larger or smaller firm. You can get away with more generic responses in those cases, but if you have a good story you should definitely bring it up.

1. You spent this last summer working at Morgan Stanley's investment banking division. It seems like you'd be crazy not to go back – why would you want to work for a smaller firm in our M&A group?

You're most likely to get this one if you didn't get a return offer – let's be honest, who *really* goes from Morgan Stanley to a boutique? It's a tough sell, but you'll have to emphasize how you like the smaller environment where you get more responsibility and work more closely with clients. The banker probably won't believe you, but it's better than outright admitting you didn't get an offer.

If the topic *does* arise, just say your lack of offer was because they were not hiring, because the group did poorly or because of the general economic climate.

2. Since you worked at Bank of America this past year, you probably have the chance to go to a lot of different large banks – why are you interested in us specifically?

There's rarely a "great" way to answer this question, so I would recommend either referencing someone you've spoken with at the bank and what they've told you OR if you don't have any kind of experience like that, you can just give the usual generic reasons given for each bank. This question often reflects a lazy interviewer more than anything else – the real reason you're interviewing with any bank is because they've given you an interview!

3. When you were working at that boutique this past summer, you mentioned how you liked the smaller team and more hands-on environment. Why not just go back there? Why do you want to move to a large bank?

It's always good to be positive about your experience, but at the same time you also want to give a good reason as to why you're moving elsewhere. If you're moving from a smaller bank to larger one, you want to emphasize learning about how larger / major deals happen, how you want to learn from the best and perhaps even how bankers at your old firm recommended that you go somewhere bigger at the beginning of your career.

4. Why are you interested in our M&A division rather than our industry groups? Our Tech, Healthcare and Energy teams have been really successful this year.

Say that you want to gain solid technical and modeling skills and be exposed to a wide variety of industries and different markets. Depending on the interviewer, it may also be appropriate to mention your interest in private equity (if you're planning to go that route) and how M&A will get you there.

M&A bankers love to think they're superior to others because of their "in-depth technical knowledge and negotiation skills," so you should play off that and use it to your advantage.

5. Why do you want to work in Capital Markets? There's hardly any market activity these days.

With this type of question – whenever a certain area is depressed at the moment or is not doing well – you want to highlight your *long-term* view of the market and how things recover in time.

For Capital Markets specifically, you can talk about your interest in the markets since you were much younger and how you've always been fascinated by IPOs, secondary offerings and such – as always, specific examples are the key to success.

6. What do you think our bank's greatest weaknesses are?

This is a silly question, but I can't say I've never heard it before. In a normal "weaknesses" question it's best to say something real and then indicate how you've improved on it, but in this case it's better to say something more innocuous and maybe point to a "weakness" like not being strong in Europe/Asia, or not having as much experience in one industry as another bank – but then indicate how it doesn't matter to you because you're more concerned with other aspects of the firm.

7. Which of our competitors do you admire the most?

This is another silly question that is designed to test your knowledge of the industry more than anything else. The best way to answer: briefly point to a competitor and state a widely known trait about them that you admire and then explain how the bank you're interviewing with also has that quality and might even be better at it.

For example, Goldman Sachs is known for its "one firm" culture and emphasis on teamwork, while the former Bear Stearns was known for its more "entrepreneurial" environment.

You could reference these types of qualities and then state how they're also seen in the bank you're interviewing with.

"Future" Questions & Suggested Answers

You'll get questions about your future plans and career goals whether you're an entry-level Analyst or Associate, or even when interviewing for higher-level positions.

The way you answer these types of questions depends on your level – if you're an MBA interviewing for an Associate position or anything above that, you need to show long-term commitment to investment banking and be more certain about what you're doing.

At the Analyst level, it's better to say you're not certain yet, but that you do want to be in business or finance and that banking will give you the skill set, experiences and network you need.

Be careful of hinting that you want to start a company or do anything unrelated to banking – those types of answers *can* work but they can also backfire easily if you don't handle them correctly.

1. I realize it's still early in your career – you haven't even graduated yet – but have you given any thought to your long-term plans? Do you think you'll stick with investment banking?

If you're interviewing for an Analyst position, you can be more uncertain about your future and just state you don't know 100% where you'll be yet, but banking is what excites you most and is what will give you the skills you need to succeed. For prospective Associates, you need to be more certain about your career path and show some commitment – indicate you've done your homework, spoken with many people and really want to make a career out of it.

2. You've had quite diverse experience prior to business school. After you complete your degree, where do you think you'll be going in the long-term?

Since this question is given to an MBA candidate, you'll want to be more certain and show more direction in terms of your plans. State that you do want to pursue investment banking as a career, after having done extensive research on your own (and hopefully, having had a previous internship or other experience in the field that you can point to).

3. What is your career goal?

This might be my least favorite question of all time, but some lazy interviewers will ask you anyway. Again, at the undergraduate level you can afford to be more vague and just indicate you want to do something in business/finance and advance to a high level; MBA candidates should indicate that they're in banking for the long-term.

4. Looking into the future 10 years, do you think you'll still be an investment banker?

Analysts can, and arguably *should*, be more uncertain, while business school graduates need to be confident about their career choice.

Strengths / Weaknesses Questions & Suggested Answers

You're not likely to get the standard "Tell me your strengths and weaknesses" question in investment banking interviews – the more plausible variant is "Tell me the feedback you received in your most recent internship / job."

The most common mistake? Not actually giving strengths and weaknesses.

This might sound crazy, but I've conducted many interviews and have seen this one countless times.

You need to focus on the qualities bankers look for when listing your strengths, and give a brief example to back up what you say if you mention something like "attention to detail" or "hard-working."

When giving weaknesses, make sure you list a real – but not critical – weakness. Don't say your weakness is that you "work too hard" but also don't say that your weakness is your "inability to get work done on time." Something like "being too critical of others" or "getting lost in the details" works better.

You also need to include something about how you have improved upon your weaknesses and/or overcome failures in the past.

1. In your internship this past summer, what feedback did you receive?

This is a variant of the "strengths and weaknesses" question. The most common mistake is being vague and just saying you performed well and they liked you, and then failing to give weaknesses / areas for improvement.

The *right* way to answer this question is to state specific qualities about you that they liked – such as ambition, drive, attention to detail, or willingness to go the extra mile for the team – and then give some specific examples of times when you demonstrated those qualities. Your all-nighters, the times you stayed the weekend working on a presentation, or the time you caught mistakes someone else above you missed are all good to mention.

The other critical part is mentioning weaknesses / areas for improvement as well – talk about *real* weaknesses and how you've worked to improve them (see more on this in #2 below).

2. What were a few areas that your team said you should try to improve upon?

The 2 most important points to remember with the "weaknesses" / "failure" question:

1. Give a *real* weakness rather than saying you "work too hard."
2. Show how you improved on it, using specific examples.

What are "real" weaknesses you could give? Maybe you weren't as communicative with the team as you should have been at the start; maybe you got lost in the details sometimes and failed to see the big picture; maybe you were too impatient with others or did not delegate tasks appropriately.

The point is to say something that *is* a real weakness but which is also not a "deal-breaker" – like saying you don't like to work hard or can't stand working in teams.

After that, state how you're working to improve your weakness. Perhaps you gave more regular updates to your superiors; or maybe you started leveraging other peoples' knowledge or the administrative staff at your work more often.

3. Did you get an offer to return to where you worked last summer?

If you did get an offer, this is an easy question: "yes." If you did *not* receive an offer, I would strongly recommend against lying about it – state that you did not receive an offer, and it was due to the economy, because your group was not hiring or due to other forces beyond your control.

The danger with lying is that finance is a very small world and it's quite easy to ask a friend or a friend of a friend what really happened.

4. After going through the accounting program at PricewaterhouseCoopers for the past year, what sort of end-of-year review did you get?

This is a disguised "tell me your strengths and weaknesses" question, so you should follow the advice given above. Since it's in relation to a full-time position you've held, you should be a bit more thoughtful about what you say; generic answers won't work as well if they ask about your performance in a specific job.

5. Let's imagine that your best friend is describing you in 3 words – which words would he/she use and why?

This is just, "Tell me your strengths" in disguise, but you need to narrow it down to 3 words. Since it's your friend describing you, you don't want to say, "Driven, attentive to detail and a team player!"

You *do* want to convey the same ideas – that you can work hard, play well in teams, and get things done no matter what obstacles you face – but you should pick your own language to get this across.

For each word you list you should also give 1-2 sentences to back up what you say, using a specific example for each one.

6. Imagine that I'm speaking to someone with whom you have not gotten along in the past – what would he/she say about you?

This is just a disguised "weaknesses" question. However, since it involves someone else this time, it's better to give a weakness such as being stubborn and holding too rigidly to your own views rather than some of the other faults you could state. Weaknesses related to team/group settings are better here.

And once again, you need to emphasize how you've worked to *improve* whatever it is that you did not do well at the time.

Don't say something like, "I get along with everyone!" as that sounds unrealistic.

7. Why would we decide *not* to give you an offer today?

This one is a bit tricky because it's so direct. You could attempt to make a joke out of this one and say something like, "If you decided you weren't hiring at all!" but that may not go well if your interviewer doesn't appreciate humor.

Otherwise, the best response may be to turn this around and say, "I see no reason why you wouldn't – I'm your best choice because…." and then give your strengths instead.

If they really press you on this, you can admit a weakness and then say how you've been working to improve it.

8. Tell me why we should hire you in 3 sentences.

This is yet another variation of the "strengths" question. But rather than giving generic strengths, you should highlight any unique experiences you've had. So maybe you haven't had banking internships before – but you *have* had unique experience abroad, in an unusual setting, or doing something not many others have done, or you've overcome unusual hardship – and those make you particularly well-qualified.

9. What was your greatest failure?

As with any "weaknesses" question, you need to use a specific story – such as an exam where you did not do well, a project that did not go as planned, or a work situation that did not turn out well – and show what you learned from it and how you've improved since then. Don't say something fake like, "My greatest failure was getting into Yale and Princeton but not Harvard" – that makes you look silly. It's better to give something real and then show how you've used the failure to develop.

Team / Leadership Questions & Suggested Answers

Teamwork and Leadership Questions are not as common as you might expect in banking interviews – many of these will come through when you discuss your work experience.

However, you could still get these questions – especially if you haven't had much team/group experience.

You have to include anecdotes in your answers because almost every question will ask for a specific event, project or experience.

Before going into interviews, you should review everything you've done in school and at work and pick some team projects that would be good to discuss.

1. Can you talk about a team project or some kind of group activity you've worked on before?

Ideally, you will talk about something that was a *success* rather than a failure. You should use the following 3-point structure for these questions:

1. State upfront what the problem was – Maximizing returns? Attracting more donors for your nonprofit? Winning more customers?
2. Talk about the team you worked in, who did what, and what your role was. Did you manage people or delegate tasks? Those are best, but if you were a "foot soldier" that can also work as long as you worked long hours, were attentive to detail and/or came through in the end to save the team in some way.
3. State the results – Did your brand awareness go up? Did you get more funding? More members for your organization?

This is one of the fundamental questions that you *need* to be prepared for, because it will almost always come up in some form in interviews.

2. Can you describe a situation where a team did not work as intended? Whose fault was it?

This is another variant of the "failure" question. I would recommend starting with a situation where your team *did* work as intended and talk about how it *wasn't* working at first and what you did to fix it.

Never blame someone specific – instead, say that there were "personality conflicts" and that you worked to resolve them.

To make things even easier, you could re-use the story you told in question #1 but instead position it as a failed team situation that turned into a successful one.

3. Can you discuss an ethical challenge you were confronted with and how you responded?

If you've already worked full-time, any ethical challenges you faced at work or any whistle-blowing you've done are best to discuss; otherwise, you could talk about how you stopped funds in a student group from being used illegally or how you caught someone cheating.

Just make sure you don't over-dramatize it – your life is not a soap opera and you shouldn't go on for 10 minutes about your internal conflict deciding whether to turn someone in for their wrongdoing.

4. What was the most difficult situation you faced as a leader and how did you respond?

Point out how you stayed calm and collected in the face of a challenging situation, and how your cool decision-making process led to a positive outcome.

Maybe 2 of your subordinates couldn't get along and you had to arbitrate; maybe you were 3 months behind on a project and had to get a team together to finish it in 2 weeks; maybe you were an RA in a dorm and you had to prevent 2 residents from harassing each other.

Just make sure that it's a *real* problem, as opposed to only getting an A- when you should have gotten an A.

5. Can you discuss a time where you had to sacrifice your time for the sake of a team project?

This is the classic "burn the midnight oil" question, and you should *definitely* have something prepared for this one. There are 2 key points:

1. Whatever you did had to involve long hours – 60-70 hours per week or more
2. It had to have been over an extended time period – so Final Exam week at school would be a poor example. Aim for something that took place over weeks or months instead.

Maybe you were working full-time and also leading your volunteer group to build shelters; maybe you were taking 6 classes, running a fraternity, and then got called upon to direct that huge Cinco de Mayo festival.

It doesn't matter too much what it was as long as your story is detailed and convincing.

6. Do you work better as a leader or a follower?

Resist the urge to say "leader" and instead talk about how you can function as both a leader and another member of the team, depending on what the situation calls for. You don't want to hog the spotlight or do everything, but if leadership is required, you can step up and handle it.

Specific examples to back up the above points are also required.

7. What is your leadership style?

A "moderate" answer works best here. You're responsible and can make sure things get done, but at the same time you don't annoy your teammates by micro-managing.

If you're interviewing for an Analyst or Associate position, you do want to be a bit more "hands-on" and point out that you often go in and correct mistakes to make sure everything's perfect – since you'll be spending around 50% of your time doing this.

Again, a specific example is needed once you've stated in general terms what your style is.

8. Does the leader make the team?

No, the team makes the team. The leader can provide direction and unify everyone, but 1 person alone is not a "team." A leader can make things better and turn around a dysfunctional team, but it's equally important for everyone to pull their own weight.

You can often re-use some of your other "leadership" or "team" stories you've used and spin them differently.

Understanding Banking & Suggested Answers

Are you sure you understand investment banking? Are you really sure? Most people going through the interview process – whether students, professionals, or MBAs – have no idea what they're getting into.

The "Understanding Banking" questions are designed to separate the wheat from the chaff – to verify that you have done your homework and are prepared to accept 80-100 hours per week.

You're more likely to get these questions if you're a Career Changer or you've never had a banking internship before.

Fortunately, they are relatively easy to answer as long as you've done some research and know the basics.

1. You've never worked in finance before. How much do you know about what bankers actually do?

You should acknowledge that although you haven't worked in the field before, you've done a lot of research on your own and have spoken with many friends in the industry.

Based on that, you know that bankers advise companies on transactions – buying and selling other companies, and raising capital. They are "agents" that connect a company with the appropriate buyer, seller, or investor.

The day-to-day work involves creating presentations, financial analysis and marketing materials such as Executive Summaries.

2. Let's say I'm working on an IPO for a client. Can you describe briefly what I would do?

First, you meet with the client and gather basic information – such as their financial details, an industry overview, and who their customers are.

Next, you meet with other bankers and the lawyers to draft the S-1 registration statement – which describes the company's business and markets it to investors. You receive some comments from the SEC and keep revising the document until it's acceptable.

Then, you spend a few weeks going on a "road show" where you present the company to institutional investors and convince them to invest. Afterwards, the company begins trading on an exchange once you've raised the capital from investors.

3. How much do you know about the lifestyle in this industry? Do you know how many hours you're going to work each week?

Say that you've done your homework and you understand it's going to be an 80-100 hour per week job. It helps if you can reference specific times when you worked that much and how you dealt with it, whether it was in a summer internship or a previous job you've held.

4. I see you were an English major in college, and had time to participate in a lot of different activities. Can you talk about a time when you had to work long hours and make sacrifices?

This is similar to many of the other questions we've been over – once again, emphasize that you not only worked long hours, but also did it over several weeks or several months.

One point that makes this question different: because of the way it was framed, you probably want to discuss something *outside* extracurricular activities.

5. Can you tell me about the different product and industry groups at our bank?

This one is bank-dependent and will differ for boutiques, middle-market firms and bulge brackets – so you *need* to research it before your interview. *Typical* product groups include Mergers & Acquisitions (M&A), Leveraged Finance (LevFin) and Restructuring; you could also consider Equity Capital Markets and Debt Capital Markets "product groups" but that one is debatable.

Common industry groups include Healthcare, Retail, Industrials, Energy, Natural Resources, Financial Institutions, Gaming, Real Estate and Technology, Media & Telecom (TMT).

Not all banks are structured this way – Goldman Sachs, for example, does not have product groups and instead handles all types of deals in its industry groups.

Meanwhile, most bulge bracket banks do not have Restructuring groups at all – that is something that only middle-market and boutique firms do.

Finally, a lot of boutiques focus only on M&A and/or Restructuring and ones that are small enough are not even split into industry groups.

"Warren Buffett" Questions & Suggested Answers

"Warren Buffett" questions are designed to test your sense of business, economics and investing. Even though you won't be *investing* as an investment banker, you still must look at a business and tell what's appealing about it and what might be cause for concern.

Common questions include how you would invest a large sum of money, how you would think about investing in companies, and how you would decide whether or not to start a business of your own.

You could also get more general questions about recent industry trends, companies you follow that are particularly interesting, and anything you've personally invested in.

To answer these questions successfully, you need to **ask the right questions before giving an answer.** Which questions, specifically?

1. Always ask what the investor or business goals are.
2. Always ask if there are any constraints, limitations, time horizons, or any other limiting factors.

You should also be citing specific numbers and figures where applicable.

These types of questions often turn into extended dialogues where you try to convince the interviewer of the merits of a particular company or investment.

1. Let's say you had $10 million to invest in anything. What would you do with it?

Always ask for the investor's goals first. Are they looking to have big capital gains over 30-40 years? Are they looking for tax-free retirement income? What types of assets interest them?

Based on the response, you can give an appropriate answer. So if they're investing over 30-40 years and going for high capital gains, a well-diversified portfolio is probably best; if they are more concerned with tax-free income, maybe you should tell them about municipal bonds.

2. If you owned a small business and were approached by a larger company about an acquisition, how would you think about the offer, and how would you make a decision on what to do?

The key terms to consider would be:

1. Price
2. Form of payment – cash, stock, or debt
3. Future plans for the company vis-à-vis your own plans.

Of course, there is much more to an M&A deal than this – you could list literally hundreds of different terms.

But those are the key ones. To make a decision you'd have to weigh each one – there's no "magical" way to decide. You might also point out that if something is particularly important to you – such as retaining a role in the company – then a difference of intentions there could be a "deal-breaker."

3. We do most of our work with technology companies. Can you talk about a trend or company in the industry that has piqued your interest lately?

This is very common if you're interviewing for any industry group – I recommend doing some research beforehand and being able to speak about trends in that market. It's easy to find this information for Technology and anything that sells to consumers, but it's a bit harder for something like Chemicals.

Most interviewees make 3 mistakes with this question:

1. They describe something that is not recent or relevant. Don't talk about the emergence of the Internet – talk about how companies are shifting their software to the Internet.
2. They don't explain the "why" – they're shifting to the web because it's cheaper and lower maintenance for them.
3. They don't explain the impact on the market as a whole – such companies are growing very quickly while more traditional companies are either struggling or shifting to that model.

4. Let's say you could start any type of business you wanted, and you had $1 million in initial funds. What would you do?

You'll want to ask follow-up questions to see if the interviewer is looking for something more specific, because this one is wide open.

If no further direction is provided, you probably want to say that you'd think about some type of niche business with high margins that requires little startup capital ($1 million is not enough to build 10 factories) and ongoing maintenance – those make it harder to turn a profit and sell the business one day.

(This is one reason why some private equity investors focus on software companies).

It's better to focus on a niche market because most broad, horizontal markets are already dominated by major companies (Microsoft, Goldman Sachs, Exxon Mobil, etc.).

You should also explain your reasoning on why this type of business would be attractive and how it could grow with minimal future investment.

5. Can you talk about a company you admire and what makes them attractive to you?

Do not say something commonly known. Saying Google or Apple, for example, would be bad.

Instead, go more obscure and pick a company no one knows so that they can tell you've done your research and so that they're less likely to ask probing questions.

You don't necessarily need to give financial details, but if the company is public and you can easily find the information, it definitely helps.

When you talk about what makes the firm attractive, emphasize qualities that *investors* would find appealing, such as a great and well-diversified customer base, a unique competitive advantage in the market or a high-margin business model. Don't say that you like them because your new iPhone is awesome.

6. Let's assume you are going to start a laundry machine business. How would you analyze whether it's viable?

To assess whether it's "viable," you have to determine whether you can make a profit with the business. For a laundry machine operation, you'd start by looking at the location (the most important part of any retail business), estimate how many customers you could get, how frequently they do laundry and how much they pay each time to do their laundry. Those variables give you an idea of monthly / annual revenue.

On the expense side, the biggest cost would be the upfront construction and/or purchase of the building and the machines. You would probably need a loan for this unless you had a spare $500K in your bank account.

You would also have to take into account the cost of maintaining and servicing the machines, building maintenance, and hiring someone to collect cash, clean, and open/close the building each day.

Overall, location plays the biggest role in the success of this type of business – if you put your new company next to an apartment complex where everyone has laundry machines, you're doomed from the beginning.

Incidentally, laundry machines happen to be *very* profitable businesses if run correctly – mostly because they are not labor intensive and do not require huge investments after you've gotten started. So you could even use this as an example for the "What kind of business would you start with $1 million?" question.

7. Tell me about an M&A deal that interested you recently.

You want to say who the buyer and seller were – and include background information if they are not household names – as well as the price and the multiples (Purchase Price / Revenue, Purchase Price / EBITDA) if they are readily available.

Read the relevant Wall Street Journal article on it, and discuss the dynamics of the deal – how it developed, if anyone else was interested, and what implications it has for the industry.

You don't need to be an expert, but you do need to sound intelligent and know the basics. If they start asking for information you don't know, just admit upfront that you don't know whatever they've asked for.

8. Pitch me a stock.

You can refer to #5 in this section – the company you admire – because both these questions are quite similar. One difference is that if the question is "pitch me a stock," you *need* to mention specific financial figures. Since the company is public, it shouldn't be too hard to find those.

Even if you can't get Revenue or EBITDA multiples, looking up its P/E multiple and saying whether it's higher or lower than competitors is a step in the right direction.

The 2 most common mistakes:

1. Failing to list specific financial figures.
2. Saying how the company stacks up relative to its *competition*, and why its prospects are more favorable.

I would structure your answer with the following 5 points in mind:

1. Give the name and summarize what the company does.
2. Give a brief overview of its financials to indicate its size and how profitable it is.
3. State how it's undervalued or more attractive than its rivals, due to any competitive advantages it has.
4. Say how there is a long-term trend in its favor – it's not just looking good in the past month.
5. Talk about how the next 5-10 years will be really good for the company.

9. Can you explain to me, in simple terms, the subprime crisis?

In simple terms, banks made mortgage loans to people who were in no position to pay them off – or even meet monthly payments. Since interest rates were at historical lows, borrowing was easy.

At the same time, mortgages were no longer just loans made to individuals – they were sliced up, combined and "packaged" into securities that banks traded, acquired and sold to investors.

A typical "package" might contain mortgages given to both "credible" borrowers as well as mortgages granted to more risky borrowers – the more risky ones were labeled "subprime."

Banks acquired these "packaged" assets on the argument that even if one "piece" of the asset was risky or likely to default, the rest still had value.

As it turns out, this was false and no one knew what any of these mortgage-related assets were worth – but as unqualified homeowners began defaulting, buyers disappeared overnight and the value of these assets plummeted to $0.

As a result, the value of many banks also approached $0 and quite a few failed or went bankrupt in the process – all because the securities were so complex that no one understood their value or the true risks involved.

10. Do you agree with the $700 billion bank bailout?

Your specific answer doesn't matter too much – just make sure you actually *give* an answer ("yes" or "no") and that you back it up with solid reasoning.

These days, it's probably better to say "yes" because, as we witnessed with the bankruptcy of Lehman Brothers, if a financial institution that's large enough collapses, it can have ripple effects and bring down the rest of the economy and financial markets along with it.

"Why Banking?" Questions & Suggested Answers

After the "Walk me through your resume" question at the beginning of almost every interview, the "Why investment banking?" is the next most important question you'll get.

It is particularly important for the Career Changer, whether you're a working professional looking to get in, an MBA student who has worked in a different industry prior to business school, or a college student who hasn't had finance or business experience.

The 2 most important points to keep in mind:

1. You've done your homework and researched this thoroughly before jumping in. Cite specific people you've spoken with.
2. You have a long-term view of your career and are fine making a sacrifice in the short-term.

1. I see you have no relevant finance experience – why should we hire you over someone who's had a previous banking internship?

Talk about how banking is about what skills you bring to the table and what kind of person you are rather than how many internships you've had. Discuss how you've worked long hours / in teams / paid attention to details before and succeeded at whatever you've done.

If you're feeling bold, you can also point out that although someone might have had a banking internship, that doesn't mean he/she did well in it – and that you may be better equipped based on your own experience.

2. I see you've worked mostly in wealth management before – why are you looking to switch into banking now?

You want to understand the bigger picture and how and why large companies make decisions rather than just working with individual investors. Working on transactions and making an impact is more interesting to you than giving individual advice to high net worth individuals (or institutions).

3. You're a smart guy/girl with a lot of options, and right now the economy is not doing well and lots of banks have failed. Why are you still interested in banking when you could do anything else?

Talk about your long-term view and how a downturn could be an even *better* time to enter the industry because you'll know how to work when times are both good and bad. In addition, you've been interested in finance for a long time and are not going to let short-term difficulties deter you from entering the field – you've explored other options and concluded that this is the best one for you.

4. The economy has been improving lately, and more people are "getting interested" in finance. How do I know you're serious and not just following everyone else?

The reverse of question #3, you can apply a similar strategy here but instead of discussing how it's an equally good time to start out in banking, just say that you hold a long-term view and haven't just become interested overnight. Being able to point to specific evidence of your interest – your own portfolio, the finance/business club you're in, or even day trading – also helps.

5. Where did your interest in finance begin?

Almost anything could work for this one – just make sure it's not too recent. Otherwise it looks like you became interested on a whim.

Also be sure to explain how your initial interest led you into the internships, activities or jobs you pursued and how those have led you to where you are today.

6. If you enjoyed your last internship and got an offer to come back, why are you trying to switch into investment banking now?

You're looking for something faster-paced where there's a better learning opportunity and more of a chance to make an impact. You've also been interested all along and realize you really do want to do it now, after having explored other alternatives and not liked them.

If this is a small company to big company move (or vice versa) you can also say something about that, using the standard reasons we went through before – small means more responsibility and client interaction, and big means working on more major deals and learning more technical skills.

7. You've advanced into a high-paying position at your current company – why would you want to move here, take a pay cut, and work twice the hours?

This is the key question asked of many career changers and anyone else at the VP-level (or above) at a company who is looking to switch into banking as an Associate.

Here are the major points to emphasize:

1. You've done your homework and spoken with a lot of people about this move – and you like the finance work you've done before.
2. Banking is faster-paced and appeals to you more because you make more of an impact.
3. You're fine with the pay cut and additional hours because of the improved opportunities to make an impact and advance.

Technical Questions & Answers

Technical Questions no longer consist entirely of "How would you value a company?" and "How does Depreciation going up by $10 affect all the statements?"

Sure, you may still get these questions – and we do cover them in detail below. But these days interviewers are going beyond the basics that everyone knows and asking questions that make you *think* instead.

There are an infinite number of Technical Questions and it's impossible to list *everything* you might encounter here. But these are 120 of the more common ones I've asked and been asked in interviews.

For Technical Questions there *is* almost always a "right answer" so we'll go through exact answers here as well.

If you find yourself *not* knowing the answer to a Technical Question, you shouldn't try to fake it – just admit that you don't know rather than stumbling through the answer.

There are a few exceptions – you really do need to know the basic concepts, like simple accounting and valuation. For more advanced modeling, there's more leeway to say that you don't have much experience or don't know the specific answer.

Accounting Questions & Answers

Here are the 5 most important Accounting concepts you need to know:

1. The 3 financial statements and what each one means.
2. How the 3 statements link together and how to walk through questions where one or multiple items change.
3. Different methods of accounting – cash-based vs. accrual, and determining when revenue and expenses are recognized.
4. When to *expense* something and when to *capitalize* it. Not all expenses are created equal.
5. What individual items on the statements, like Goodwill, Intangibles and Shareholders' Equity, actually mean.

The questions below will cover all these concepts.

1. Walk me through the 3 financial statements.

"The 3 major financial statements are the Income Statement, Balance Sheet and Cash Flow Statement.

The Income Statement gives the company's revenue and expenses, and goes down to Net Income, the final line on the statement.

The Balance Sheet shows the company's Assets – its resources – such as Cash, Inventory and PP&E, as well as its Liabilities – such as Debt and Accounts Payable – and Shareholders' Equity. Assets must equal Liabilities plus Shareholders' Equity.

The Cash Flow Statement begins with Net Income, adjusts for non-cash expenses and working capital changes, and then lists cash flow from investing and financing activities; at the end, you see the company's net change in cash."

2. How do the 3 statements link together?

"To tie the statements together, Net Income from the Income Statement flows into Shareholders' Equity on the Balance Sheet, and into the top line of the Cash Flow Statement.

Changes to Balance Sheet items appear as working capital changes on the Cash Flow Statement, and investing and financing activities affect Balance Sheet items such as PP&E, Debt and Shareholders' Equity. The Cash and Shareholders' Equity items on the Balance Sheet act as "plugs," with Cash flowing in from the final line on the Cash Flow Statement."

3. If I were stranded on a desert island, only had 1 statement and I wanted to review the overall health of a company – which statement would I use and why?

You would use the Cash Flow Statement because it gives a true picture of how much cash the company is actually generating, independent of all the non-cash expenses you might have. And that's the #1 thing you care about when analyzing the overall financial health of any business – its cash flow.

4. Let's say I could only look at 2 statements to assess a company's prospects – which 2 would I use and why?

You would pick the Income Statement and Balance Sheet, because you can create the Cash Flow Statement from both of those (assuming, of course that you have "before" and "after" versions of the Balance Sheet that correspond to the same period the Income Statement is tracking).

5. Walk me through how Depreciation going up by $10 would affect the statements.

Income Statement: Operating Income would decline by $10 and assuming a 40% tax rate, Net Income would go down by $6.

Cash Flow Statement: The Net Income at the top goes down by $6, but the $10 Depreciation is a non-cash expense that gets added back, so overall Cash Flow from Operations goes *up* by $4. There are no changes elsewhere, so the overall Net Change in Cash goes up by $4.

Balance Sheet: Plants, Property & Equipment goes down by $10 on the Assets side because of the Depreciation, and Cash is up by $4 from the changes on the Cash Flow Statement.

Overall, Assets is down by $6. Since Net Income fell by $6 as well, Shareholders' Equity on the Liabilities & Shareholders' Equity side is down by $6 and both sides of the Balance Sheet balance.

Note: With this type of question I always recommend going in the order:

1. Income Statement
2. Cash Flow Statement
3. Balance Sheet

This is so you can check yourself at the end and make sure the Balance Sheet balances.

Remember that an Asset going up *decreases* your Cash Flow, whereas a Liability going up *increases* your Cash Flow.

6. If Depreciation is a non-cash expense, why does it affect the cash balance?

Although Depreciation is a non-cash expense, it is tax-deductible. Since taxes *are* a cash expense, Depreciation affects cash by reducing the amount of taxes you pay.

7. What happens when Accrued Compensation goes up by $10?

No changes to the Income Statement.

On the Cash Flow Statement Accrued Compensation is a liability, so an increase *adds* to your Cash Flow from Operations in the Changes in Working Capital category. Cash Flow from Operations then goes up by $10, as does the Net Change in Cash at the bottom.

On the Balance Sheet, the Liabilities & Shareholders' Equity side would go up by $10 because Accrued Compensation is a liability – and that would be balanced out by the Cash going up by $10 on the Assets side.

8. What happens when Inventory goes up by $10, assuming you pay for it with cash?

No changes to the Income Statement.

On the Cash Flow Statement, Inventory is an asset so that *decreases* your Cash Flow from Operations – it goes down by $10, as does the Net Change in Cash at the bottom.

On the Balance Sheet under Assets, Inventory is up by $10 but Cash is down by $10, so the changes cancel out and Assets still equals Liabilities & Shareholders' Equity.

9. Why is the Income Statement not affected by changes in Inventory?

This is a common interview mistake – incorrectly stating that Working Capital changes show up on the Income Statement.

In the case of Inventory, the expense is only recorded when the goods associated with it are sold – so if it's just sitting in a warehouse, it does not count as a Cost of Good Sold or Operating Expense until the company manufactures it into a product and sells it.

10. Let's say Apple is buying $100 worth of new iPod factories with debt. How are all 3 statements affected at the start of "Year 1," before anything else happens?

At the start of "Year 1," before anything else has happened, there would be no changes on Apple's Income Statement (yet).

On the Cash Flow Statement, the additional investment in factories would show up under Cash Flow from Investing as a net *reduction* in Cash Flow (so Cash Flow is down by $100 so far). And the additional $100 worth of debt raised would show up as an *addition* to Cash Flow, canceling out the investment activity. So the cash number stays the same.

On the Balance Sheet, there is now an additional $100 worth of factories in the Plants, Property & Equipment line, so PP&E is up by $100 and Assets is therefore up by $100. On the other side, debt is up by $100 as well and so both sides balance.

11. Now let's go out 1 year, to the start of Year 2. Assume the debt is high-yield so no principal is paid off, and assume an interest rate of 10%. Also assume the factories depreciate at a rate of 10% per year. What happens?

After a year has passed, Apple must pay interest expense and must record the depreciation.

Operating Income would decrease by $10 due to the 10% depreciation charge each year, and the $10 in additional Interest Expense would decrease the Pre-Tax Income by $20 altogether ($10 from the depreciation and $10 from Interest Expense).

Assuming a tax rate of 40%, Net Income would fall by $12.

On the Cash Flow Statement, Net Income at the top is down by $12. Depreciation is a non-cash expense, so you add it back and the end result is that Cash Flow from Operations is down by $2.

That's the only change on the Cash Flow Statement, so overall Cash is down by $2.

On the Balance Sheet, under Assets, Cash is down by $2 and PP&E is down by $10 due to the depreciation, so overall Assets are down by $12.

On the other side, since Net Income was down by $12, Shareholders' Equity is also down by $12 and both sides balance.

Remember, the debt number under Liabilities does not change since we've assumed some of the debt is actually paid back.

12. At the start of Year 3, the factories all break down and the value of the equipment is written down to $0. The loan must also be paid back now. Walk me through the 3 statements.

After 2 years, the value of the factories is now $80 if we go with the 10% depreciation per year assumption. It is this $80 that we will write down in the 3 statements.

First, on the Income Statement, the $80 write-down shows up in the Pre-Tax Income line. With a 40% tax rate, Net Income declines by $48.

On the Cash Flow Statement, Net Income is down by $48 but the write-down is a non-cash expense, so we add it back – and therefore Cash Flow from Operations *increases* by $32.

There are no changes under Cash Flow from Investing, but under Cash Flow from Financing there is a $100 charge for the loan payback – so Cash Flow from Investing falls by $100.

Overall, the Net Change in Cash falls by $68.

On the Balance Sheet, Cash is now down by $68 and PP&E is down by $80, so Assets have decreased by $148 altogether.

On the other side, Debt is down $100 since it was paid off, and since Net Income was down by $48, Shareholders' Equity is down by $48 as well. Altogether, Liabilities & Shareholders' Equity are down by $148 and both sides balance.

13. Now let's look at a different scenario and assume Apple is ordering $10 of additional iPod inventory, using cash on hand. They order the inventory, but they have not manufactured or sold anything yet – what happens to the 3 statements?

No changes to the Income Statement.

Cash Flow Statement – Inventory is up by $10, so Cash Flow from Operations *decreases* by $10. There are no further changes, so overall Cash is down by $10.

On the Balance Sheet, Inventory is up by $10 and Cash is down by $10 so the Assets number stays the same and the Balance Sheet remains in balance.

14. Now let's say they sell the iPods for revenue of $20, at a cost of $10. Walk me through the 3 statements under this scenario.

Income Statement: Revenue is up by $20 and COGS is up by $10, so Gross Profit is up by $10 and Operating Income is up by $10 as well. Assuming a 40% tax rate, Net Income is up by $6.

Cash Flow Statement: Net Income at the top is up by $6 and Inventory has decreased by $10 (since we just manufactured the inventory into real iPods), which is a net *addition* to cash flow – so Cash Flow from Operations is up by $16 overall.

These are the only changes on the Cash Flow Statement, so Net Change in Cash is up by $16.

On the Balance Sheet, Cash is up by $16 and Inventory is down by $10, so Assets is up by $6 overall.

On the other side, Net Income was up by $6 so Shareholders' Equity is up by $6 and both sides balance.

15. Could you ever end up with negative shareholders' equity? What does it mean?

Yes. It is common to see this in 2 scenarios:

1. Leveraged Buyouts with dividend recapitalizations – it means that the owner of the company has taken out a large portion of its equity (usually in the form of cash), which can sometimes turn the number negative.
2. It can also happen if the company has been losing money consistently and therefore has a declining Retained Earnings balance, which is a portion of Shareholders' Equity.

It doesn't "mean" anything in particular, but it can be a cause for concern and possibly demonstrate that the company is struggling (in the second scenario).

Note: Shareholders' equity never turns negative *immediately after* an LBO – it would only happen following a dividend recap or continued net losses.

16. Recently, banks have been writing down their assets and taking huge quarterly losses. Walk me through what happens on the 3 statements when there's a write-down of $100.

First, on the Income Statement, the $100 write-down shows up in the Pre-Tax Income line. With a 40% tax rate, Net Income declines by $60.

On the Cash Flow Statement, Net Income is down by $60 but the write-down is a non-cash expense, so we add it back – and therefore Cash Flow from Operations increases by $40.

Overall, the Net Change in Cash rises by $40.

On the Balance Sheet, Cash is now up by $40 and *an* asset is down by $100 (it's not clear *which* asset since the question never stated the specific asset to write-down). Overall, the Assets side is down by $60.

On the other side, since Net Income was down by $60, Shareholders' Equity is also down by $60 – and both sides balance.

17. When would a company collect cash from a customer and *not* record it as revenue?

Three examples come to mind:

1. Web-based subscription software
2. Cell phone carriers that cell annual contracts
3. Magazine publishers that sell subscriptions

Companies that agree to services in the future often collect cash upfront to ensure stable revenue – this makes investors happy as well since they can better predict a company's performance.

Per the rules of GAAP (Generally Accepted Accounting Principles), you only record revenue when you actually perform the services – so the company would not record everything as revenue right away.

18. If cash collected is not recorded as revenue, what happens to it?

Usually it goes into the Deferred Revenue balance on the Balance Sheet under Liabilities.

Over time, as the services are performed, the Deferred Revenue balance "turns into" real revenue on the Income Statement.

19. What's the difference between cash-based and accrual accounting?

Cash-based accounting recognizes revenue and expenses when cash is actually received or paid out; accrual accounting recognizes revenue when collection is *reasonably certain* (i.e. after a customer has ordered the product) and recognizes expenses when they are incurred rather than when they are paid out in cash.

Most large companies use accrual accounting because paying with credit cards and lines of credit is so prevalent these days; very small businesses may use cash-based accounting to simplify their financial statements.

20. Let's say a customer pays for a TV with a credit card. What would this look like under cash-based vs. accrual accounting?

In cash-based accounting, the revenue would not show up until the company charges the customer's credit card, receives authorization, and deposits the funds in its bank account – at which point it would show up as both Revenue on the Income Statement and Cash on the Balance Sheet.

In accrual accounting, it would show up as Revenue right away but instead of appearing in Cash on the Balance Sheet, it would go into Accounts Receivable at first. Then, once the cash is actually deposited in the company's bank account, it would "turn into" Cash.

21. How do you decide when to capitalize rather than expense a purchase?

If the asset has a useful life of over 1 year, it is capitalized (put on the Balance Sheet rather than shown as an expense on the Income Statement). Then it is depreciated (tangible assets) or amortized (intangible assets) over a certain number of years.

Purchases like factories, equipment and land all last longer than a year and therefore show up on the Balance Sheet. Employee salaries and the cost of manufacturing products (COGS) only cover a short period of operations and therefore show up on the Income Statement as normal expenses instead.

22. Why do companies report both GAAP and non-GAAP (or "Pro Forma") earnings?

These days, many companies have "non-cash" charges such as Amortization of Intangibles, Stock-Based Compensation, and Deferred Revenue Write-down in their Income Statements. As a result, some argue that Income Statements under GAAP no longer reflect how profitable most companies truly are.
Non-GAAP earnings are almost always higher because these expenses are excluded; companies like to present both sets of figures to look better to investors.

23. A company has had positive EBITDA for the past 10 years, but it recently went bankrupt. How could this happen?

Several possibilities:

1. The company is spending too much on Capital Expenditures – these are not reflected at all in EBITDA, but it could be cash-flow negative if CapEx spending is too high.
2. The company has very high interest expense and is no longer able to afford its debt.
3. The company's debt all matures on one date and it is unable to refinance it due to a "credit crunch" – and it runs out of cash completely when paying back the debt.

4. It has significant one-time charges (from litigation, for example) and those are high enough to bankrupt the company.

Remember, EBITDA excludes investment in (and depreciation of) long-term assets, interest and one-time charges – and all of these could end up bankrupting the company.

24. Normally Goodwill remains constant on the Balance Sheet – why would it be impaired and what does Goodwill Impairment mean?

Usually this happens when a company has been acquired and the acquirer re-assesses its "intangible assets" (such as customers, brand, and intellectual property) and finds that they are worth significantly less than they originally thought.

It often happens in acquisitions where the buyer "overpaid" for the seller and can result in a large net loss on the Income Statement (see: eBay/Skype).

25. Under what circumstances would Goodwill increase?

Technically Goodwill can increase if the company re-assesses its value and finds that it is worth more, but that is *rare*. What usually happens is 1 of 2 scenarios:

1. The company gets acquired or bought out and Goodwill changes as a result, since it's an accounting "plug" for the purchase price in an acquisition.
2. The company acquires another company and pays more than what its assets are worth – this is then reflected in the Goodwill number.

Valuation Questions & Answers

These days, you need to have a better-than-average understanding of Valuation. Forget about just knowing the 3 methodologies – you need to understand how and why they're used, which ones produce the highest or lowest values and also keep in mind some exceptions to each "rule."

1. What are the 3 major valuation methodologies?

Comparable Companies, Precedent Transactions and Discounted Cash Flow Analysis.

2. Rank the 3 valuation methodologies from highest to lowest expected value.

Trick question – there is no ranking that always holds. *In general*, Precedent Transactions will be higher than Comparable Companies due to the Control Premium built into acquisitions.

Beyond that, a DCF could go either way and it's best to say that it's more *variable* than other methodologies. Often it produces the highest value, but it can produce the lowest value as well depending on your assumptions.

3. When would you *not* use a DCF in a Valuation?

You do not use a DCF if the company has unstable or unpredictable cash flows (tech or bio-tech startup) or when debt and working capital serve a fundamentally different role. For example, banks and financial institutions do not re-invest debt and working capital is a huge part of their Balance Sheets – so you wouldn't use a DCF for such companies.

4. What other Valuation methodologies are there?

Other methodologies include:

- Liquidation Valuation – Valuing a company's assets, assuming they are sold off and then subtracting liabilities to determine how much capital, if any, equity investors receive
- Replacement Value – Valuing a company based on the cost of replacing its assets
- LBO Analysis – Determining how much a PE firm could pay for a company to hit a "target" IRR, usually in the 20-25% range

- Sum of the Parts – Valuing each division of a company separately and adding them together at the end

5. When would you use a Liquidation Valuation?

This is most common in bankruptcy scenarios and is used to see whether equity shareholders will receive any capital after the company's debts have been paid off. It is often used to advise struggling businesses on whether it's better to sell off assets separately or to try and sell the entire company.

6. When would you use Sum of the Parts?

This is most often used when a company has completely different, unrelated divisions – a conglomerate like General Electric, for example.

If you have a plastics division, a TV and entertainment division, an energy division, a consumer financing division and a technology division, you should not use the same set of Comparable Companies and Precedent Transactions for the entire company.

Instead, you should use different sets for each division, value each one separately, and then add them together to get the Combined Value.

7. When do you use an LBO Analysis as part of your Valuation?

Obviously you use this whenever you're looking at a Leveraged Buyout – but it is also used to establish how much a private equity firm could pay, which is usually lower than what companies will pay.

It is often used to set a "floor" on a possible Valuation for the company you're looking at.

8. What are the most common multiples used in Valuation?

The most common multiples are EV/Revenue, EV/EBITDA, EV/EBIT, P/E (Share Price / Earnings per Share), and P/BV (Share Price / Book Value).

9. What are some examples of industry-specific multiples?

Technology (Internet): EV / Unique Visitors, EV / Pageviews

Retail / Airlines: EV / EBITDAR (Earnings Before Interest, Taxes, Depreciation, Amortization & Rent)

Energy: P / MCFE, P / MCFE / D (MCFE = 1 Million Cubic Foot Equivalent, MCFE/D = MCFE per Day), P / NAV (Share Price / Net Asset Value)

Real Estate Investment Trusts (REITs): Price / FFO, Price / AFFO (Funds From Operations, Adjusted Funds From Operations)

Technology and Energy should be straightforward – you're looking at traffic and energy reserves as value drivers rather than revenue or profit.

For Retail / Airlines, you often remove Rent because it is a major expense and one that varies significantly between different types of companies.

For REITs, Funds From Operations is a common metric that adds back Depreciation and subtracts gains on the sale of property. Depreciation is a non-cash yet extremely large expense in real estate, and gains on sales of properties are assumed to be non-recurring, so FFO is viewed as a "normalized" picture of the cash flow the REIT is generating.

10. Would an LBO or DCF give a higher valuation?

Technically it could go either way, but in *most* cases the LBO will give you a lower valuation.

Here's the easiest way to think about it: with an LBO, you do not get any value from the cash flows of a company in between Year 1 and the final year – you're only valuing it based on its terminal value.

With a DCF, by contrast, you're taking into account *both* the company's cash flows in between and its terminal value, so values tend to be higher.

Note: Unlike a DCF, an LBO model by itself does not give a specific valuation. Instead, you set a desired IRR and determine how much you could pay for the company (the valuation) based on that.

11. How would you present these Valuation methodologies to a company or its investors?

Usually you use a "football field" chart where you show the valuation range implied by each methodology. You *always* show a range rather than one specific number.

As an example, see page 10 of this document (a Valuation done by Credit Suisse for the Leveraged Buyout of Sungard Data Systems in 2005):

http://edgar.sec.gov/Archives/edgar/data/789388/000119312505074184/dex99c2.htm

12. How would you value an apple tree?

The same way you would value a company: by looking at what comparable apple trees are worth (relative valuation) and the value of the apple tree's cash flows (intrinsic valuation).

Yes, you could do a DCF for anything – even an apple tree.

13. Why can't you use Equity Value / EBITDA as a multiple rather than Enterprise Value / EBITDA?

EBITDA is available to all investors in the company – rather than just equity holders. Similarly, Enterprise Value is also available to all shareholders so it makes sense to pair them together.

Equity Value / EBITDA, however, is comparing apples to oranges because Equity Value does not reflect the company's entire capital structure – only the part available to equity investors.

14. When would a Liquidation Valuation produce the highest value?

This is highly unusual, but it could happen if a company had substantial hard assets but the market was severely undervaluing it for a specific reason (such as an earnings miss or cyclicality).

As a result, the company's Comparable Companies and Precedent Transactions would likely produce lower values as well – and if its assets were valued highly enough, Liquidation Valuation might give a higher value than other methodologies.

15. Let's go back to 2004 and look at Facebook back when it had no profit and no revenue. How would you value it?

You would use Comparable Companies and Precedent Transactions and look at more "creative" multiples such as EV/Unique Visitors and EV/Pageviews rather than EV/Revenue or EV/EBITDA.

You would *not* use a "far in the future DCF" because you can't reasonably predict cash flows for a company that is not even making money yet.

This is a very common **wrong** answer given by interviewees. When you can't predict cash flow, use other metrics – don't try to predict cash flow anyway!

16. What would you use in conjunction with Free Cash Flow multiples – Equity Value or Enterprise Value?

Trick question. For *Unlevered* Free Cash Flow, you would use Enterprise Value, but for *Levered* Free Cash Flow you would use Equity Value.

Remember, Unlevered Free Cash Flow excludes Interest and thus represents money available to *all* shareholders, whereas Levered already includes Interest and the money is therefore only available to equity shareholders.

Debt investors have already "been paid" with the interest payments they received.

17. You never use Equity Value / EBITDA, but are there any cases where you might use Equity Value / Revenue?

Never say never. It's very rare to see this, but sometimes large financial institutions with big cash balances have negative Enterprise Values – so you might use Equity Value / Revenue instead.

You might see Equity Value / Revenue if you've listed a set of financial and non-financial companies on a slide, you're showing Revenue multiples for the non-financial companies, and you want to show something similar for the financials.

Note, however, that in most cases you would be using other multiples such as P/E and P/BV with banks anyway.

18. How do you select Comparable Companies / Precedent Transactions?

The 3 main ways to select companies and transactions:

1. Industry classification
2. Financial criteria (Revenue, EBITDA, etc.)
3. Geography

For Precedent Transactions, you often limit the set based on date and only look at transactions within the past 1-2 years.

The most important factor is industry – that is *always* used to screen for companies/transactions, and the rest may or may not be used depending on how specific you want to be.

Here are a few examples:

Comparable Company Screen: Oil & gas producers with market caps over $5 billion

Comparable Company Screen: Digital media companies with over $100 million in revenue

Precedent Transaction Screen: Airline M&A transactions over the past 2 years involving sellers with over $1 billion in revenue

Precedent Transaction Screen: Retail M&A transactions over the past year

19. How do you apply the 3 valuation methodologies to actually get a value for the company you're looking at?

Sometimes this simple fact gets lost in discussion of Valuation methodologies. You take the median multiple of a set of companies or transactions, and then multiply it by the relevant metric from the company you're valuing.

Example: If the median EBITDA multiple from your set of Precedent Transactions is 8x and your company's EBITDA is $500 million, the implied Enterprise Value would be $4 billion.

To get the "football field" valuation graph you often see, you look at the minimum, maximum, 25th percentile and 75th percentile in each set as well and create a range of values based on each methodology.

20. Why would a company with similar growth and profitability to its Comparable Companies be valued at a premium?

This could happen for a number of reasons:

- The company has just reported earnings well-above expectations and its stock price has risen recently.
- It has some type of competitive advantage not reflected in its financials, such as a key patent or other intellectual property.
- It has just won a favorable ruling in a major lawsuit.
- It is the market leader in an industry and has greater market share than its competitors.

21. You mentioned that Precedent Transactions usually produce a higher value than Comparable Companies – can you think of a situation where this is *not* the case?

Sometimes this happens when there is a substantial mismatch between the M&A market and the public market. For example, no public companies have been acquired recently but there have been a lot of small private companies acquired at extremely low valuations.

For the *most part* this generalization is true but keep in mind that there are exceptions to almost every "rule" in finance.

22. Why does Warren Buffett prefer EBIT multiples to EBITDA multiples?

Warren Buffett once famously said, "Does management think the tooth fairy pays for capital expenditures?"

He dislikes EBITDA because it excludes the often sizable Capital Expenditures companies make and hides how much cash they are actually using to finance their operations.

In some industries there is also a large gap between EBIT and EBITDA – anything that is very capital-intensive, for example, will show a big disparity.

Enterprise / Equity Value Questions & Answers

For the most part, Enterprise Value and Equity Value questions are straightforward. Just make sure you know all the relevant formulas and understand concepts like the Treasury Stock Method for calculating diluted shares.

1. Why do we look at both Enterprise Value and Equity Value?

Enterprise Value represents the value of the company that is attributable to all investors; Equity Value only represents the portion available to shareholders (equity investors). You look at both because Equity Value is the number the public-at-large sees, while Enterprise Value represents its true value.

2. When looking at an acquisition of a company, do you pay more attention to Enterprise or Equity Value?

Enterprise Value, because that's how much an acquirer really "pays" and includes the often mandatory debt repayment.

3. What's the formula for Enterprise Value?

EV = Equity Value + Debt + Preferred Stock + Minority Interest - Cash

4. Why do you need to add Minority Interest to Enterprise Value?

Whenever a company owns over 50% of another company, it is required to report the financial performance of the other company as part of its own performance.

So even though it doesn't *own* 100%, it *reports* 100% of the majority-owned subsidiary's financial performance.

In keeping with the "apples-to-apples" theme, you must add Minority Interest to get to Enterprise Value so that your numerator and denominator both reflect 100% of the majority-owned subsidiary.

5. How do you calculate fully diluted shares?

Take the basic share count and add in the dilutive effect of stock options and any other dilutive securities, such as warrants, convertible debt or convertible preferred stock.

To calculate the dilutive effect of options, you use the Treasury Stock Method (detail on this below).

6. Let's say a company has 100 shares outstanding, at a share price of $10 each. It also has 10 options outstanding at an exercise price of $5 each – what is its fully diluted equity value?

Its basic equity value is $1,000 (100 * $10 = $1,000). To calculate the dilutive effect of the options, first you note that the options are all "in-the-money" – their exercise price is less than the current share price.

When these options are exercised, there will be 10 new shares created – so the share count is now 110 rather than 100.

However, that doesn't tell the whole story. In order to exercise the options, we had to "pay" the company $5 for each option (the exercise price).

As a result, it now has $50 in additional cash, which it now uses to buy back 5 of the new shares we created.

So the fully diluted share count is 105, and the fully diluted equity value is $1,050.

7. Let's say a company has 100 shares outstanding, at a share price of $10 each. It also has 10 options outstanding at an exercise price of $15 each – what is its fully diluted equity value?

$1,000. In this case the options' exercise price is above the current share price, so they have no dilutive effect.

8. Why do you subtract cash in the formula for Enterprise Value? Is that always accurate?

The "official" reason: Cash is subtracted because it's considered a non-operating asset and because Equity Value implicitly accounts for it.

The way I think about it: In an acquisition, the buyer would "get" the cash of the seller, so it effectively pays less for the company based on how large its cash balance is. Remember, Enterprise Value tells us how much you'd really have to "pay" to acquire another company.

It's not always accurate because technically you should be subtracting only *excess* cash – the amount of cash a company has *above* the minimum cash it requires to operate.

9. Is it always accurate to add Debt to Equity Value when calculating Enterprise Value?

In most cases, yes, because the terms of a debt agreement usually say that debt *must* be refinanced in an acquisition. And in most cases a buyer will pay off a seller's debt, so it is accurate to say that any debt "adds" to the purchase price.

However, there could always be exceptions where the buyer does *not* pay off the debt. These are rare and I've personally never seen it, but once again "never say never" applies.

10. Could a company have a negative Enterprise Value? What would that mean?

Yes. It means that the company has an extremely large cash balance, or an extremely low market capitalization (or both). You see it with:

1. Companies on the brink of bankruptcy.
2. Financial institutions, such as banks, that have large cash balances.

These days, there's a lot of overlap in these 2 categories…

11. Could a company have a negative Equity Value? What would that mean?

No. This is not possible because you cannot have a negative share count and you cannot have a negative share price.

12. Why do we add Preferred Stock to get to Enterprise Value?

Preferred Stock pays out a fixed dividend, and preferred stock holders also have a higher claim to a company's assets than equity investors do. As a result, it is seen as more similar to debt than common stock.

Discounted Cash Flow Questions & Answers

Beyond knowing the basics of how to construct a DCF, you also need to understand concepts such as WACC, Cost of Equity and the proper discount rates to use depending on the scenario. Interviewers also like to ask about Terminal Value – how you calculate it, advantages and disadvantages of different methods, and signs that it's "too high."

1. Walk me through a basic DCF.

"A DCF values a company based on the Present Value of its Cash Flows and the Present Value of its Terminal Value.

First, you project out a company's financials using assumptions for revenue growth, expenses and Working Capital; then you get down to Free Cash Flow for each year, which you then sum up and discount to a Net Present Value, based on your discount rate – usually the Weighted Average Cost of Capital.

Once you have the present value of the Cash Flows, you determine the company's Terminal Value, using either the Multiples Method or the Gordon Growth Method, and then also discount that back to its Net Present Value using WACC.

Finally, you add the two together to determine the company's Enterprise Value."

2. Walk me through how you get from Revenue to Free Cash Flow in the projections.

Subtract COGS and Operating Expenses to get to Operating Income (EBIT). Then, multiply by (1 – Tax Rate), add back Depreciation and other non-cash charges, and subtract Capital Expenditures and the change in Working Capital.

Note: This gets you to *Unlevered* Free Cash Flow since you went off EBIT rather than EBT. You might want to confirm that this is what the interviewer is asking for.

3. What do you usually use for the discount rate?

Normally you use WACC (Weighted Average Cost of Capital), though you might also use Cost of Equity depending on how you've set up the DCF.

4. How do you calculate WACC?

The formula is: Cost of Equity * (% Equity) + Cost of Debt * (% Debt) * (1 – Tax Rate) + Cost of Preferred * (% Preferred).

In all cases, the percentages refer to how much of the company's capital structure is taken up by each component.

For Cost of Equity, you can use the Capital Asset Pricing Model (CAPM – see the next question) and for the others you usually look at comparable companies/debt issuances and the interest rates and yields issued by similar companies to get estimates.

5. How do you calculate the Cost of Equity?

Cost of Equity = Risk-Free Rate + Beta * Equity Risk Premium

The risk-free rate represents how much a 10-year or 20-year US Treasury should yield; Beta is calculated based on the "riskiness" of Comparable Companies and the Equity Risk Premium is the % by which stocks are expected to out-perform "risk-less" assets.

Normally you pull the Equity Risk Premium from a publication called *Ibbotson's*.

Note: This formula does not tell the whole story. Depending on the bank and how precise you want to be, you could also add in a "size premium" and "industry premium" to account for how much a company is expected to out-perform its peers is according to its market cap or industry.

Small company stocks are expected to out-perform large company stocks and certain industries are expected to out-perform others, and these premiums reflect these expectations.

6. How do you get to Beta in the Cost of Equity calculation?

You look up the Beta for each Comparable Company (usually on Bloomberg), un-lever each one, take the median of the set and then lever it based on your company's capital structure. Then you use this Levered Beta in the Cost of Equity calculation.

For your reference, the formulas for un-levering and re-levering Beta are below:

Un-Levered Beta = Levered Beta / (1 + ((1 - Tax Rate) x (Total Debt/Equity)))

Levered Beta = Un-Levered Beta x (1 + ((1 - Tax Rate) x (Total Debt/Equity)))

7. Why do you have to un-lever and re-lever Beta?

Again, keep in mind our "apples-to-apples" theme. When you look up the Betas on Bloomberg (or from whatever source you're using) they will be levered to reflect the debt already assumed by each company.

But each company's capital structure is different and we want to look at **how "risky" a company is regardless of what % debt or equity it has.**

To get that, we need to un-lever Beta each time.

But at the end of the calculation, we need to re-lever it because we want the Beta used in the Cost of Equity calculation to reflect the true risk of our company, **taking into account its capital structure this time.**

8. Let's say that you use Levered Free Cash Flow rather than Unlevered Free Cash Flow in your DCF – what is the effect?

Levered Free Cash Flow gives you Equity Value rather than Enterprise Value, since the cash flow is only available to equity investors (debt investors have already been "paid" with the interest payments).

9. If you use Levered Free Cash Flow, what should you use as the Discount Rate?

You would use the Cost of Equity rather than WACC since we're not concerned with Debt or Preferred Stock in this case – we're calculating Equity Value, not Enterprise Value.

10. How do you calculate the Terminal Value?

You can either apply an exit multiple to the company's Year 5 EBITDA, EBIT or Free Cash Flow (Multiples Method) or you can use the Gordon Growth method to estimate its value based on its growth rate into perpetuity.

The formula for Terminal Value using Gordon Growth is: Terminal Value = Year 5 Free Cash Flow * (1 + Growth Rate) / (Discount Rate – Growth Rate).

11. Why would you use Gordon Growth rather than the Multiples Method to calculate the Terminal Value?

In banking, you almost always use the Multiples Method to calculate Terminal Value in a DCF. It's much easier to get appropriate data for exit multiples since they are based on Comparable Companies – picking a long-term growth rate, by contrast, is always a shot in the dark.

However, you might use Gordon Growth if you have no good Comparable Companies or if you have reason to believe that multiples will change significantly in the industry several years down the road. For example, if an industry is very cyclical you might be better off using long-term growth rates rather than exit multiples.

12. What's an appropriate growth rate to use when calculating the Terminal Value?

Normally you use the country's long-term GDP growth rate, the rate of inflation, or something similarly conservative.

For companies in mature economies, a long-term growth rate over 5% would be quite aggressive since most developed economies are growing at less than 5% per year.

13. How do you select the appropriate exit multiple when calculating Terminal Value?

Normally you look at the Comparable Companies and pick the median of the set, or something close to it.

As with almost anything else in finance, you always show a *range* of exit multiples and what the Terminal Value looks like over that range rather than picking one specific number.

So if the median EBITDA multiple of the set were 8x, you might show a *range* of values using multiples from 6x to 10x.

14. Which method of calculating Terminal Value will give you a higher valuation?

It's hard to generalize because both are highly dependent on the assumptions you make. In general, the Multiples Method will be more *variable* than the Gordon Growth method because exit multiples tend to span a wider range than possible long-term growth rates.

15. How do you know if your DCF is too dependent on future assumptions?

If significantly more than 50% of the company's Enterprise Value comes from its Terminal Value, your DCF is probably too dependent on future assumptions.

In reality, almost all DCFs are "too dependent on future assumptions" but usually when the Terminal Value contributes over a certain % of the company's Enterprise Value is when you know you're too high.

16. Should Cost of Equity be higher for a $5 billion or $500 million market cap company?

It should be higher for the $500 million company, because all else being equal, smaller companies are expected to outperform large companies in the stock market (and therefore be "more risky"). Using a Size Premium in your calculation would also ensure that Cost of Equity is higher for the $500 million company.

17. What about WACC – will it be higher for a $5 billion or $500 million company?

This is a bit of a trick question because it depends on whether or not the capital structure is the same for both companies. If the capital structure *is* the same in terms of percentages and interest rates and such, then WACC should be higher for the $500 million company for the same reasons as mentioned above.

If the capital structure is *not* the same, then it could go either way depending on how much debt/preferred stock each one has and what the interest rates are.

18. Two companies are exactly the same, but one has debt and one does not – which one will have the higher WACC?

All else being equal, the one without debt will have a higher WACC, because debt is "less expensive" than equity. Why?

- Interest on debt is tax-deductible (hence the (1 – Tax Rate) multiplication in the WACC formula).
- Debt is senior to equity in a company's capital structure – debt holders would be paid first in a liquidation or bankruptcy.
- Intuitively, interest rates on debt are usually lower than the Cost of Equity numbers you see (usually over 10%). As a result, the Cost of Debt portion of WACC will contribute less to the total figure than the Cost of Equity portion will.

19. What should you do if you don't believe management's projections for a DCF model?

You can take a few different approaches:

- You can create your own projections.
- You can modify management's projections downward to make them more conservative.
- You can show a sensitivity table based on different growth rates and margins and show the values assuming managements' projections and assuming a more conservative set of numbers.

In reality, you'd probably do all of these if you had unrealistic projections.

20. Why would you *not* use a DCF for a bank or other financial institution?

Banks use debt differently than other companies and do not re-invest it in the business – they use it to create products instead. Also, interest is a critical part of banks' business models and working capital takes up a huge part of their Balance Sheets – so a DCF for a financial institution would not make much sense.

For financial institutions, it's more common to use a *dividend discount model* for valuation purposes.

Merger Model Questions & Answers

You don't need to understand merger models as well as an M&A banker does, but you do need to more than just the basics, especially if you've had a finance internship or full-time job before.

It's important to know the effects of an acquisition, and understand concepts such as synergies and why Goodwill/Intangibles actually get created.

One thing that's *not* important? Walking through how all 3 statements are affected by an acquisition. In 99% of cases, you only care about the Income Statement in a merger model (despite rumors to the contrary).

1. Walk me through a basic merger model.

"A merger model is used to analyze the financial profiles of 2 companies, the purchase price and how the purchase is made, and determines whether the buyer's EPS increases or decreases.

Step 1 is making assumptions about the acquisition – the price and whether it was cash, stock or debt or some combination of those. Next, you determine the valuations and shares outstanding of the buyer and seller and project out an Income Statement for each one.

Finally, you combine the Income Statements, adding up line items such as Revenue and Operating Expenses, and adjusting for Foregone Interest on Cash and Interest Paid on Debt in the Combined Pre-Tax Income line; you apply the buyer's Tax Rate to get the Combined Net Income, and then divide by the new share count to determine the combined EPS."

2. Why would a company want to acquire another company?

Several possible reasons:

- The buyer wants to gain market share by buying a competitor.
- The buyer needs to grow more quickly and sees an acquisition as a way to do that.
- The buyer believes the seller is undervalued.

- The buyer wants to acquire the seller's customers so it can up-sell and cross-sell to them.
- The buyer thinks the seller has a critical technology, intellectual property or some other "secret sauce" it can use to significantly enhance its business.
- The buyer believes it can achieve significant synergies and therefore make the deal accretive for its shareholders.

3. Why would an acquisition be dilutive?

An acquisition is dilutive if the additional amount of Net Income the seller contributes is not enough to offset the buyer's foregone interest on cash, additional interest paid on debt, or the effects of issuing additional shares.

Acquisition effects – such as amortization of intangibles – can also make an acquisition dilutive.

4. Is there a rule of thumb for calculating whether an acquisition will be accretive or dilutive?

In the general case, no – you have to go in and calculate the effects.

However, if it's an all-stock deal you can use a shortcut to assess whether it is accretive (see question #5).

5. A company with a higher P/E acquires one with a lower P/E – is this accretive or dilutive?

Trick question. You can't tell unless you *also* know that it's an all-stock deal. If it's an all-cash or all-debt deal, the P/E multiples of the buyer and seller don't matter because no stock is being issued.

Sure, *generally* getting more earnings for less is good and is more likely to be accretive but there's no hard-and-fast rule unless it's an all-stock deal.

6. What is the rule of thumb for assessing whether an M&A deal will be accretive or dilutive?

In an all-stock deal, if the buyer has a higher P/E than the seller, it will be accretive; if the buyer has a lower P/E, it will be dilutive.

On an intuitive level if you're paying more for earnings than what the market values your own earnings at, you can guess that it will be dilutive; and likewise, if you're paying less for earnings than what the market values your own earnings at, you can guess that it would be accretive.

7. What are the complete effects of an acquisition?

1. Foregone Interest on Cash – The buyer loses the Interest it would have otherwise earned if it uses cash for the acquisition.
2. Additional Interest on Debt – The buyer pays additional Interest Expense if it uses debt.
3. Additional Shares Outstanding – If the buyer pays with stock, it must issue additional shares.
4. Combined Financial Statements – After the acquisition, the seller's financials are added to the buyer's.
5. Creation of Goodwill/Intangibles/Other – These Balance Sheet items that represent a "premium" paid to a company's "fair value" also get created.

8. Why do Goodwill/Intangibles get created in an acquisition?

These represent the value over the "fair market value" of the seller that the buyer has paid. You calculate the number by subtracting the book value of a company from its equity purchase price.

More specifically, Goodwill and Intangibles represent things like the value of customer relationships, brand names and intellectual property – valuable assets, but not true financial Assets that show up on the Balance Sheet.

9. What is the difference between Goodwill and Intangibles?

Goodwill typically stays the same over many years and is not amortized. It changes only if there's goodwill impairment (or another acquisition).

Intangibles, by contrast, are amortized over several years and affect the Income Statement by hitting the Pre-Tax Income line.

There's also a difference in terms of what they each represent, but bankers rarely go into that level of detail – accountants and valuation specialists worry about assigning each one to specific items.

10. Is there anything else "intangible" besides Goodwill/Intangibles that could also impact the combined company?

Yes. You could also have a Purchased In-Process R&D Write-off and a Deferred Revenue Write-off.

The first refers to any Research & Development projects that were purchased in the acquisition but which have not been completed yet. The logic is that unfinished R&D projects require significant resources to complete, and as such, the "expense" must be recognized as part of the acquisition.

The second refers to cases where the seller has collected cash for a service but not yet recorded it as revenue, and the buyer must write-down the value of the Deferred Revenue to avoid "double-counting" revenue.

11. What are synergies, and can you provide a few examples?

Synergies refer to cases where 2 + 2 = 5 (or 6, or 7…) in an acquisition. Basically, the buyer gets **more value than out of an acquisition than what the financials would predict.**

There are 2 types: **revenue synergies** and **cost (or expense) synergies.**

- **Revenue Synergies:** The combined company can cross-sell products to new customers or up-sell new products to existing customers. It might also be able to expand into new geographies as a result of the deal.
- **Cost Synergies:** The combined company can consolidate buildings and administrative staff and can lay off redundant employees. It might also be able to shut down redundant stores or locations.

12. How are synergies used in merger models?

Revenue Synergies: Normally you add these to the Revenue figure for the combined company and then assume a certain margin on the Revenue – this additional Revenue then flows through the rest of the combined Income Statement.

Cost Synergies: Normally you reduce the combined COGS or Operating Expenses by this amount, which in turn boosts the combined Pre-Tax Income and thus Net Income, raising the EPS and making the deal more accretive.

13. Are revenue or cost synergies more important?

No one in M&A takes revenue synergies seriously because they're so hard to predict. Cost synergies are taken a bit more seriously because it's more straightforward to see how buildings and locations might be consolidated and how many redundant employees might be eliminated.

That said, the chances of any synergies actually being realized are almost 0 so few take them seriously at all.

14. All else being equal, which method would a company *prefer* to use when acquiring another company – cash, stock, or debt?

Assuming the buyer had unlimited resources, it would always prefer to use cash when buying another company. Why?

- Cash is "cheaper" than debt because interest rates on cash are usually under 5% whereas debt interest rates are almost always higher than that. Thus, foregone interest on cash is almost always less than additional interest paid on debt for the same amount of cash/debt.
- Cash is also less "risky" than debt because there's no chance the buyer might fail to raise sufficient funds from investors.
- It's hard to compare the "cost" directly to stock, but in general stock is the most "expensive" way to finance a transaction – remember how the Cost of Equity is almost always higher than the Cost of Debt? That same principle applies here.
- Cash is also less risky than stock because the buyer's share price could change dramatically once the acquisition is announced.

15. How much debt could a company issue in a merger or acquisition?

Generally you would look at Comparable Companies/ Precedent Transactions to determine this. You would use the combined company's LTM (Last Twelve Months) EBITDA figure, find the median Debt/EBITDA ratio of whatever companies you're looking at, and apply that to your own EBITDA figure to get a rough idea of how much debt you could raise.

16. How do you determine the Purchase Price for the target company in an acquisition?

You use the same Valuation methodologies we already discussed. If the seller is a public company, you would pay more attention to the **premium** paid over the current share price to make sure it's "sufficient" (generally in the 15-30% range) to win shareholder approval.

For private sellers, more weight is placed on the traditional methodologies.

17. Let's say a company overpays for another company – what typically happens afterwards and can you give any recent examples?

There would be an incredibly high amount of Goodwill & Intangibles created if the price is far above the fair market value of the company. Depending on how the acquisition goes, there might be a large goodwill impairment charge later on if the company decides it overpaid.

A recent example is the eBay / Skype deal, in which eBay paid a huge premium and extremely high multiple for Skype. It created excess Goodwill / Intangibles, and eBay later ended up writing down much of the value and taking a large quarterly loss as a result.

18. A buyer pays $100 million for the seller in an all-stock deal, but a day later the market decides it's only worth $50 million. What happens?

The buyer's share price would be cut in half, and it would instantly lose half its market capitalization. Depending on how the deal was structured, the seller would effectively only be receiving half of what it had originally negotiated.

This illustrates one of the major risks of all-stock deals: sudden changes in share price could dramatically impact valuation.

19. Why do most mergers and acquisitions fail?

Like so many things, M&A is "easier said than done." In practice it's very difficult to acquire and integrate a different company, actually realize synergies and also turn the acquired company into a profitable division.

Many deals are also done for the wrong reasons, such as CEO ego or pressure from shareholders. Any deal done without both parties' best interests in mind is likely to fail.

20. What role does a merger model play in deal negotiations?

The model is used as a sanity check and is used to test various assumptions. A company would **never** decide to do a deal based on the output of a model.

It might say, "Ok, the model tells us this deal could work and be moderately accretive – it's worth exploring more."

It would never say, "Aha! This model predicts 21% accretion – we should definitely acquire them now!"

Emotions, ego and personalities play a far bigger role in M&A (and any type of negotiation) than numbers do.

LBO Model Questions & Answers

The field is wide open when you get to questions on Leveraged Buyouts and LBO models. You need to know the basics, but it's also important to understand how different variables affect the output and how and why a PE firm would structure a deal in a certain way.

In general, you're more likely to get these types of questions if you've already had a banking internship or if you've worked in a group like Financial Sponsors that works extensively with PE firms.

But even if neither of those applies to you, it's still better to be over-prepared.

1. Walk me through a basic LBO model.

"In an LBO Model, Step 1 is making assumptions about the Purchase Price, Debt/Equity ratio, Interest Rate on Debt and other variables; you might also assume something about the company's operations, such as Revenue Growth or Margins, depending on how much information you have.

Step 2 is to create a Sources & Uses section, which shows how you finance the transaction and what you use the capital for; this also tells you how much Investor Equity is required.

Step 3 is to adjust the company's Balance Sheet for the new Debt and Equity figures, and also add in Goodwill/Intangibles on the Assets side to make everything balance.

In Step 4, you project out the company's Income Statement, Balance Sheet and Cash Flow Statement, and determine how much debt is paid off each year, based on the available Cash Flow and the required Interest Payments.

Finally, in Step 5, you make assumptions about the exit after several years, usually assuming an EBITDA Exit Multiple, and calculate the return based on how much equity is returned to the firm."

2. Why would you use leverage when buying a company?

To boost your return. Remember, any debt you use in an LBO is not "your money" – so if you're paying $5 billion for a company, it's easier to earn a high return on $2 billion of your own money and $3 billion borrowed from elsewhere vs. $3 billion of your own money and $2 billion of borrowed money.

A secondary benefit is that the firm also has more capital available to purchase other companies because they've used leverage.

3. What variables impact an LBO model the most?

Purchase and exit multiples have the biggest impact on the returns of a model. After that, the amount of leverage (debt) used also has a significant impact, followed by operational characteristics such as revenue growth and EBITDA margins.

4. What is an "ideal" candidate for an LBO?

"Ideal" candidates have stable and predictable cash flows, low-risk businesses, not much need for ongoing investments such as Capital Expenditures, as well as an opportunity for expense reductions to boost their margins. A strong management team also helps, as does a base of assets to use as collateral for debt.

The most important part is stable cash flow.

5. Can you explain how the Balance Sheet is adjusted in an LBO model?

First, the Liabilities & Equities side is adjusted – the new debt is added on, and the Shareholders' Equity is "wiped out" and replaced by however much equity the private equity firm is contributing.

On the Assets side, Cash is adjusted for any cash used to finance the transaction, and then Goodwill & Intangibles are used as a "plug" to make the Balance Sheet balance.

Depending on the transaction, there could be other effects as well – such as capitalized financing fees added to the Assets side.

6. Why are Goodwill & Intangibles created in an LBO?

Remember, these both represent the premium paid to the "fair market value" of the company. In an LBO, they act as a "plug" and ensure that the changes to the Liabilities & Equity side are balanced by changes to the Assets side.

7. We saw that a strategic acquirer will usually prefer to pay for another company in cash – if that's the case, why would a PE firm want to use debt in an LBO?

It's a different scenario because:

1. The PE firm does not intend to hold the company for the long-term – it usually sells it after a few years, so it is less concerned with the "expense" of cash vs. debt and more concerned about using leverage to boost its returns by reducing the amount of capital it has to contribute upfront.
2. In an LBO, the debt is "owned" by the company, so they assume much of the risk. Whereas in a strategic acquisition, the buyer "owns" the debt so it is more risky for them.

8. Do you need to project all 3 statements in an LBO model? Are there any "shortcuts?"

Yes, there are shortcuts and you don't necessarily *need* to project all 3 statements.

For example, you do not need to create a full Balance Sheet – bankers sometimes skip this if they are in a rush. You *do* need some form of Income Statement, something to track how the Debt balances change and some type of Cash Flow Statement to show how much cash is available to repay debt.

But a full-blown Balance Sheet is not strictly required, because you can just make assumptions on the Net Change in Working Capital rather than looking at each item individually.

9. How would you determine how much debt can be raised in an LBO and how many tranches there would be?

Usually you would look at Comparable LBOs and see the terms of the debt and how many tranches each of them used. You would look at companies in a similar size range and industry and use those criteria to determine the debt your company can raise.

10. What is the difference between bank debt and high-yield debt?

This is a simplification, but broadly speaking there are 2 "types" of debt: "bank debt" and "high-yield debt." There are many differences, but here are a few of the most important ones:

- High-yield debt tends to have higher interest rates than bank debt (hence the name "high-yield").
- High-yield debt interest rates are usually fixed, whereas bank debt interest rates are "floating" – they change based on LIBOR or the Fed interest rate.
- High-yield debt has **incurrence covenants** while bank debt has **maintenance covenants**. The main difference is that incurrence covenants *prevent* you from doing something (such as selling an asset, buying a factory, etc.) while maintenance covenants *require* you to maintain a minimum financial performance (for example, the Debt/EBITDA ratio must be below 5x at all times).
- Bank debt is usually **amortized** – the principal must be paid off over time – whereas with high-yield debt, the entire principal is due at the end (**bullet maturity**).

Usually in a sizable Leveraged Buyout, the PE firm uses both types of debt.

Again, there are many different types of debt – this is a simplification, but you won't need to know more than this for interviews.

11. Why might you use bank debt rather than high-yield debt in an LBO?

If the PE firm or the company is concerned about meeting interest payments and wants a lower-cost option, they might use bank debt; they might also use bank debt if they are planning on major expansion or Capital Expenditures and don't want to be restricted by incurrence covenants.

12. Why would a PE firm prefer high-yield debt instead?

If the PE firm intends to refinance the company at some point or they don't believe their returns are too sensitive to interest payments, they might use high-yield debt. They might also use the high-yield option if they don't have plans for major expansion or selling off the company's assets.

13. Why would a private equity firm buy a company in a "risky" industry, such as technology?

Although technology is more "risky" than other markets, remember that there are mature, cash flow-stable companies in almost every industry. There are some PE firms that specialize in very specific goals, such as:

- Industry consolidation – buying competitors in a similar market and combining them to increase efficiency and win more customers.
- Turnarounds – taking struggling companies and making them function properly again.
- Divestitures – selling off divisions of a company or taking a division and turning it into a strong stand-alone entity.

So even if a company isn't doing well or seems risky, the firm might buy it if it falls into one of these categories.

14. How could a private equity firm boost its return in an LBO?

1. Lower the Purchase Price in the model.
2. Raise the Exit Multiple / Exit Price.
3. Increase the Leverage (debt) used.
4. Increase the company's growth rate (organically or via acquisitions).
5. Increase margins by reducing expenses (cutting employees, consolidating buildings, etc.).

Note that these are all "theoretical" and refer to the model rather than reality – in practice it's hard to actually *implement* these.

15. What is a dividend recapitalization ("dividend recap")?

In a dividend recap, the company takes on new debt solely to pay a special dividend out to the PE firm that bought it.

It would be like if you made your friend take out a personal loan just so he/she could pay you a lump sum of cash with the loan proceeds.

As you might guess, dividend recaps have developed a bad reputation, though they're still commonly used.

16. Why would a PE firm choose to do a dividend recap of one of its portfolio companies?

Primarily to boost returns. Remember, all else being equal, more leverage means a higher return to the firm.

With a dividend recap, the PE firm is "recovering" some of its equity investment in the company – and as we saw earlier, the lower the equity investment, the better, since it's easier to earn a higher return on a smaller amount of capital.

17. How would a dividend recap impact the 3 financial statements in an LBO?

No changes to the Income Statement. On the Balance Sheet, Debt would go up and Shareholders' Equity would go down and they would cancel each other out so that everything remained in balance.

On the Cash Flow Statement, there would be no changes to Cash Flow from Operations or Investing, but under Financing the additional Debt raised would cancel out the Cash paid out to the investors, so Net Change in Cash would not change.

Brain Teaser Questions & Answers

Brain teasers are silly to ask in interviews, but that doesn't mean you won't get them.

The questions below just scrape the surface of what's out there, but they are among the more common types seen in interviews.

The key with brain teasers is to keep your cool and attempt to reason your way through any question, even if you haven't a clue as to the answer. This is one case where saying nothing or stating you don't know *hurts* you.

1. A car drives 60 miles at an average speed of 30 miles per hour. How fast should the driver drive to travel the same 60 miles in the same time period, but at an average of 60 miles per hour?

This is not possible. To travel 60 miles at an average speed of 30 miles per hour, 2 hours are required; to travel at an average of 60 miles per hour in those same 2 hours, you'd need to go 120 miles rather than 60 miles.

The most common mistake is to respond with 90 miles per hour or 120 miles per hour – if you get a question like this in an interview, be sure to ask clarifying questions that could point you in the right direction.

In this case, for example, we might have reframed the question and asked if it was really, "How do you travel 60 miles in 2 hours at an average speed of 60 miles per hour?" If he said yes, we'd instantly know it was not possible.

2. What is the angle formed by the hands of the clock when it is 1:45?

142.5 degrees. If we just think of the clock hour hand at 1 and the minute hand at the 45 position (near 9 o'clock), that is 120 degrees since they are 4 "numbers" apart, and each number on the clock represents 30 degrees (360/12).

However, recall that the hour hand has already moved by the time the minute hand has reached the 45 position – it is now closer to 2 o'clock. 45 represent ¾ of an hour, so the hour hand will have moved ¾ of 30 degrees, or 22.5 degrees. If we add them together, we see that 120 + 22.5 = 142.5

The most common mistake is to state the original number we arrived at – 120 degrees – rather than finishing the calculation. Sometimes with this type of question the interviewer will lead you in the right direction if you have a basic idea of how to solve it.

3. You have stacks of quarters, dimes, nickels and pennies (these represent $0.25, $0.10, $0.05 and $0.01, respectively, in the US monetary system for anyone international). There are an unlimited number of coins in each stack.

You can take coins from a stack in any amount and in any order and place them in your hand. What is the greatest dollar value in coins you can have in your hands without being able to make change for a dollar?

$1.19. There are a few ways to think about this, but the easiest is to start with the largest coin – quarters – first and then work your way down.

4 quarters equals $1.00, so we clearly can't do that – but 3 quarters are ok because that's only $0.75.

Next, we have dimes. Recall that we can use any combination of coins to make change for a dollar – if we were to have 5 dimes and put them together with the 2 quarters, that would make $1.00. So we'll use 4 instead – there's no combination there that would result in $1.00 when added to the quarters.

Nickels are next. Here, we can't have any – because even a single nickel, $0.05, would add up to $1.00 when added to the 3 quarters we have ($0.75) and the 2 dimes ($0.20).

Finally, for pennies we know that we can't have 5 pennies ($0.05) because we could then get to $1.00 using the same logic as we saw for the nickels. So 4 is the maximum here.

With that, we see that 3 Quarters + 4 Dimes + 4 Pennies = $1.19

The most common mistake is not realizing you can use any combination of your existing coins to add up to a dollar – most people understand that you can't have 4 quarters, but sometimes interviewees forget that 2 quarters + 5 dimes = $1.00 as well.

This is another case where asking clarifying questions – such as whether 2 quarters + 5 dimes would count as $1.00 – really helps.

4. You have a hose along with a 3 liter bucket and a 5 liter bucket. How do you get exactly 4 liters of water?

First, fill the 3 liter bucket and pour it into the 5 liter one. Then, re-fill the 3 liter bucket and pour it into the 5 liter bucket until it's full – that leaves 1 liter in the 3 liter bucket and 5 in the 5 liter bucket.

Then, pour out the 5 liter bucket so nothing is left and pour the 1 liter of water from the 3 liter bucket into the 5 liter bucket. Finally, fill the 3 liter bucket completely and pour it into the 5 liter bucket – since it already has 1 liter of water, you'll get exactly 4 liters.

For this type of question, it's easiest to use deductive reasoning to get the answer. You know you can't possibly get 4 liters of water in the 3 liter bucket – it has to be in the 5 liter bucket.

Since you can easily get 3 liters of water, that tells you that the "trick" will involve isolating the remaining 1 liter and getting it into the 5 liter bucket. So then the question comes down to how to get the 1 liter of water in the 3 liter bucket. You know it has to involve pouring water into the 5 liter bucket, and that leads you in the right direction.