

# Intervals

Life often dictates that we will need to take measurements. I was born five minutes after my sister, weighing 6lb 10 oz, but now weigh a lot more as I'm 189cm tall! If I was travelling by car from London to Edinburgh, I would need to allow much more time than if I was travelling by car from London to Birmingham as it is over three times the distance. I would also use more petrol to get there.

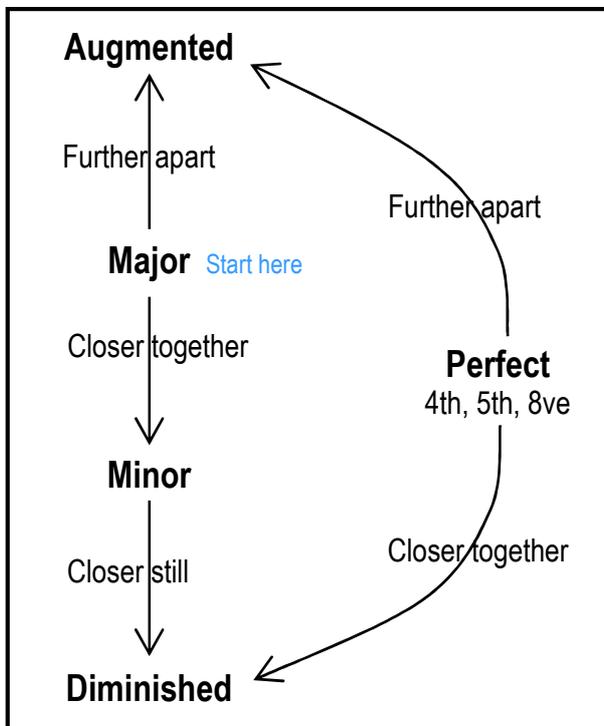
In music, we can take measurements in various ways: speed, dynamic level and the number of beats in a bar etc. For the Grade 5 exam, you will need to be able to measure the "distance" between two given notes. If these two notes are being played simultaneously, it is called an *harmonic* interval; if the notes are played one after the other, they would be seen as a *melodic* interval. Two pieces of information need to be given in your answer: the *Quantity* and the *Quality* of the Interval.



If I needed to work out the Quantity of the distance between these two notes, I would simply count from the bottom note upwards: line, space, line: a 3rd. You could check by the saying the letter names: C—D—E: a 3rd.



If I am calculating the Quantity here, I would count from the bottom note upwards: space, line, space, line, space, line: a 6th or: C—D—E—F—G—A: a 6th.



As we can see, working out one part of the answer is very straightforward—you count from the bottom note to the top and include every letter in between them. Using your fingers can be quite useful! The other part (the Quality) is not hard, but there are more things to remember. The diagram on the left is very helpful when working it out. If you know the notes of all the scales (or can work them out confidently) this part of the exam will give you no difficulty.

After deciding on the Quantity of the two notes write down their names. The next question to ask yourself is very important: *is the top note in the major scale of the bottom note?* If it is, it will be a Major Interval - unless it is a 4th, 5th or octave (8ve), as then it will be a Perfect Interval (we will discuss the reason for this later). If the upper note is a semitone closer to the bottom note than the Major Interval, it would be Minor. If it is a semitone closer than that, it would be Diminished; if it is a semitone further away than a Major it would be an Augmented Interval. If the interval is greater than an octave, you can count the number as

before and state that (it will be in the region of 9th-15th as the Quantity) or use the numbers 2nd - 8ve and prefix the answer with the word *Compound*. Phew, that was a mouthful! Let's look at lots of examples to be sure that all of this makes sense. (The same logical process will be used for every example that follows.)



What is the Quantity here?  
Line, space, line, space, line, space: a 6th.  
Is the top note in the major key of the bottom note? Is E in G major? Yes.  
It is a Major 6th.



What is the Quantity here?  
Line, space, line: a 3rd.  
Is the top note in the major key of the bottom note? Is Bb in G major? No.  
So if G is the bottom note, what is the 3rd note of G major? B.  
G-B = Major 3rd  
G-Bb = one semitone closer  
It is a Minor 3rd.



What is the Quantity here?  
Space, line, space, line, space, line, space, line, space, line: a 10th  
Is the top note in the major key of the bottom note? Is G in Eb major? Yes.  
It is a Major 10th or a Compound Major 3rd.



What is the Quantity here?

Line, space, line, space, line, space,  
line, space: an octave.

Is the top note in the major key of the  
bottom note? Is G in G major? Yes.

It is a Perfect 8ve.



What is the Quantity here?

Space, line, space, line, space, line,  
space, line: an octave.

Is the top note in the major key of the  
bottom note? Is G# in G major? No.

So if G is the bottom note, what *is* the  
8th note of G major? G.

G-G: Perfect 8ve

G-G#: one semitone further apart

It is an Augmented 8ve.



What is the Quantity here?

Space, line, space, line, space, line,  
space, line: an octave.

Is the top note in the major key of the  
bottom note? Is Gb in G major? No.

So if G is the bottom note, what *is* the  
8th note of G major? G.

G-G: Perfect 8ve

G-Gb: one semitone closer together

It is a Diminished 8ve.



What is the Quantity here?

Space, line, space, line: a 4th.

Is the top note in the major key of the  
bottom note? Is Bb in F major? Yes.

It is a Perfect 4th.



What is the Quantity here?

Line, space, line, space, line, space,  
line: a 7th.

Is the top note in the major key of the  
bottom note? Is Bb in C# major? Not  
sure, that is tricky! Strip away the  
accidentals - is B in C major? Yes.

C-B: Major 7th

C-Bb: one semitone closer (Minor)

C#-Bb: one semitone closer still

It is a Diminished 7th.



What is the Quantity here?

Space, line: a 2nd.

Is the top note in the major key of the  
bottom note? Is E# in D major? No.

So if D is the bottom note, what *is* the  
2nd note of D major? E.

D-E: Major 2nd

D-E#: one semitone further apart

It is a Augmented 2nd.



What is the Quantity here?

Line, space, line, space, line, space,  
line, space, line, space, line, space,  
line, space, line: a 15th .

Is the top note in the major key of the  
bottom note? Is E in E major? Yes.

It is a Perfect 15th or a Compound  
Perfect 8ve.



What is the Quantity here?

Line, space, line, space, line: a 5th.

Is the top note in the major key of the  
bottom note? Is G# in Cx major?  
Crumbs, I've no idea! Strip away the  
accidentals - is G in C major? Yes.

C-G: Perfect 5th

C#-G#: Perfect 5th (both notes went  
up one semitone, so the distance re-  
mains the same)

Cx-G#: one semitone closer

It is a Diminished 5th.



What is the Quantity here?

Line, space, line, space, line, space,  
line, space, line, space, line, space,  
line: a 13th.

Is the top note in the major key of the  
bottom note? Is F in A major? No.

So if A is the bottom note, what *is* the  
13th (or 6th) note of A major? F#.

A-F#: Major 6th

A-F: one semitone closer together.

It is a Minor 13th or  
a Compound Minor 6th.



What is the Quantity here?  
Line, space, line, space, line, space, line: a 7th

Is the top note in the major key of the bottom note? Is C in D major? No.

So if D is the bottom note, what *is* the 7th note of D major? C#.

D-C#: Major 7th  
D-C: one semitone closer

It is a Minor 7th.



What is the Quantity here?  
Space, line, space, line, space, line, space, line, space: an 11th .

Is the top note in the major key of the bottom note? Is B in F# major? Yes.

It is a Perfect 11th or a Compound Perfect 4th.



What is the Quantity here?  
Line, space, line, space, line, space, line: a 7th

Is the top note in the major key of the bottom note? Is Db in E major? No.

So if E is the bottom note, what *is* the 7th note of E major? D#.

E-D#: Major 7th  
E-D: one semitone closer (Minor)  
E-Db: one semitone closer still

It is a Diminished 7th.



What is the Quantity here?  
Line, space, line: a 3rd .

Is the top note in the major key of the bottom note? Is Cx in A major? No.

So if A is the bottom note, what *is* the 3rd note of A major? C#

A-C#: Major 3rd  
A-Cx: one semitone further apart

It is an Augmented 3rd.



What is the Quantity here?  
Line, space, line, space, line: a 5th

Is the top note in the major key of the bottom note? Is F in B major? No.

So if B is the bottom note, what *is* the 5th note of B major? F#.

B-F#: Perfect 5th  
B-F: one semitone closer

It is a Diminished 5th.



What is the Quantity here?  
Space, line, space: a 3rd.

Is the top note in the major key of the bottom note? Is F in D major? No.

So if D is the bottom note, what *is* the 3rd note of D major? F#.

D-F#: Major 3rd  
D-F: one semitone closer

It is a Minor 3rd.



What is the Quantity here?  
Line, space, line, space: a 4th.

Is the top note in the major key of the bottom note? Is E in Bb major? No.

So if Bb is the bottom note, what *is* the 4th note of Bb major? Eb.

Bb-Eb: Perfect 4th  
Bb-E: one semitone further apart

It is an Augmented 4th.



What is the Quantity here?  
Space, line, space, line, space, line, space, line, space, line: a 14th.

Is the top note in the major key of the bottom note? Is Abb in Bb major? Mmm. No.

So if Bb is the bottom note, what *is* the 14th (or 7th) note of Bb major? A.

Bb-A: Major 14th  
Bb-Ab: one semitone closer (Minor)  
Bb-Abb: one semitone closer still

It is a Diminished 14th or a Compound Diminished 7th.



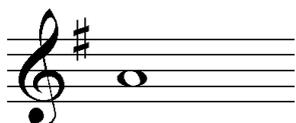
What is the Quantity here?  
Space, line, space, line, space, line, space: a 7th.

Is the top note in the major key of the bottom note? Is E in F major? Yes.

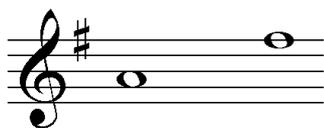
It is a Major 7th.

Sometimes the question may be asked slightly differently. Instead of two notes being given and you have to work out the Interval, the *bottom* note and the Quality and Quantity of the Interval are given and you have to draw the *top* note. Virtually the same process is used that has been described over the last three pages. Remember to distinguish between a harmonic interval (the two notes played simultaneously) and a melodic interval (the notes are played one after the other). Let's investigate a few examples so that you can feel confident about answering this type of question.

Draw the melodic interval of a Major 6th after this note.



What is the note called? A. What is the 6th note of A major? F#. Simply draw a semibreve on the top line of the staff - no accidental is needed due to the key signature.



Draw the harmonic interval of a Minor 7th above this note.



What is this note called? G natural. What is the 7th note of G Major? F#. A Minor 7th is a semitone closer to the bottom note than a Major 7th. What is a semitone lower than F#? F.



Draw the harmonic interval of a Compound Perfect 4th above this note.



What is this note called? Bb. What is the 4th note of Bb Major? Eb. Brilliant that is a Perfect 4th then. As it is a Compound interval, it needs to be drawn an octave higher than normal.



Draw the melodic interval of an Augmented 6th after this note.



What is the note called? Eb. What is the 6th note of Eb Major? C. Using the diagram on the first page of this section, we see that an Augmented interval is a semitone further away than a Major one. To make the C a semitone further away we need to sharpen it. No accidental is needed as the key signature shows it will already be a C#.



Draw the harmonic interval of a Diminished 5th above this note.



What is the note called? C#. What is the 5th note of C# Major? Golly, I'm not sure! Ok, take away the sharp and ask what is the 5th note of C Major? G. If the 5th note of C Major is G, the 5th note of C# Major must be G#. C# to G# is a Perfect 5th, so to obtain a Diminished 5th I must move the top note a semitone closer to the bottom one. The key signature necessitates using an accidental.



Draw the melodic interval of a Minor 3rd after this note.



What is the note called? Bb. What is the 3rd note of Bb Major? D. Using the diagram on the first page of this section, we see that a Minor interval is a semitone closer to the given note than a Major one. To make the D a semitone closer we need to make it a Db (definitely not a C#).



Draw the harmonic interval of an Augmented 15th after this note.



What is the name of the note? Db. What is the 8th note of Db Major? Db. To make it an Augmented interval simply make the top note go up a semitone to D natural. As it is a 15th, make sure you draw it two octaves higher than the given note.



Draw the melodic interval of a Diminished 7th above this note.



What is the name of the note? F natural. What is the 7th note of F Major? E. F to E is a Major 7th. F to Eb is a semitone closer, making it a Minor 7th. If we make the top come a semitone closer still it will become a Diminished 7th: F to E double flat.



Draw the melodic interval of a Compound Minor 6th after this note.



What is this note called? F double sharp. What is the 6th note of F double sharp Major? Wow, that hurts my head just starting to think about it! Take away the double sharp. What is the 6th note of F Major? D. If F to D is a Major 6th, then F# to D# is also a Major 6th. A Minor 6th is a semitone closer together than a Major one, so simply making the bottom note a F double sharp again will give the required distance.

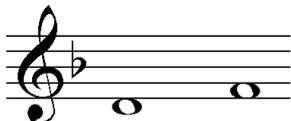


Here are some common mistakes:

Draw the harmonic interval of a Minor 3rd above this note.



**Wrong Answer:** this is a *melodic* interval of a Minor 3rd.



**Correct Answer:**



Draw the melodic interval of a Perfect 5th after this note.



**Wrong Answer:** this has ignored the F# in the Key Signature.



**Correct Answer:**



Draw the melodic interval of a Augmented 4th after this note.



**Wrong Answer:** the top note has gone the wrong direction from Perfect.



**Correct Answer:**



Draw the harmonic interval of a Compound Major 6th above this note.



**Wrong Answer:** not Compound.



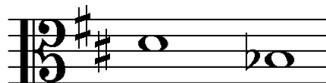
**Correct Answer:**



Draw the melodic interval of a Major 3rd after this note.



**Wrong Answer:** the given note is always the lowest note.



**Correct Answer:**



Draw the harmonic interval of a Diminished 7th above this note.



**Wrong Answer:** never alter the bottom note.

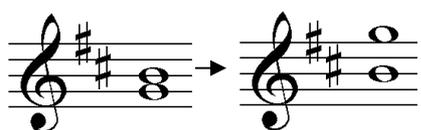


**Correct Answer:**

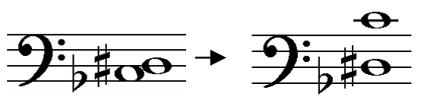


The many previous examples would have given you plenty of experience at using a process that will ensure a correct answer in the exam. On the final page of this section we will tie up a loose end from the first page and finish with some important tips.

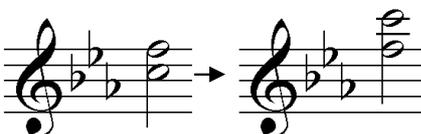
You will have played many Major and Minor scales on your instrument (and maybe pentatonic, mixolydian, whole tone and others too). You would never have played a Perfect scale. Why are some intervals called "Perfect" then? What is so special about them? It's all to do with the frequency a given note vibrates at and the ratio of the frequencies between the two notes. A simple ratio would give an "in tune" or "consonant" sound. A more complex ratio would give more "tension" and might seem "dissonant." If you were to invert (i.e. turn upside down) the two notes of an interval you are examining, an interesting pattern would emerge. (You don't need to know any of this for the present exam, it is purely background information.)



Here we have G-B, a Major 3rd. When it is inverted this changes to a Minor 6th.



Here we have C-D#, an Augmented 2nd. When it is inverted it becomes a Diminished 7th.



Here we have C-F, a Perfect 4th. When it is inverted it remains Perfect, a Perfect 5th.

When inverting intervals:  
 Major → Minor  
 Minor → Major  
 Augmented → Diminished  
 Diminished → Augmented  
 Perfect → Perfect  
 The product of the Quantity of the two intervals is equal to 9. (2 becomes 7, 3 becomes 6, 4 becomes 5, 5 becomes 4 etc.)

Remember:

⇒ Be careful when working out the Quantity of the Interval. If it is a large number, count the distance slowly several times to make sure you have the correct number.

⇒ Do not count the distance in semitones. Look at the two examples on the right. They are both four semitones apart however, the first one is a Minor Third, with the second being an Augmented Second. Even though you would hear them as identical intervals when played on a piano, theoretically they are different to each other.



⇒ Check the key signature, though ignore them if they are not relevant to the notes in the Question. In all the examples in this revision aid there have only been two notes. In the Exam, you may often see a short extract of perhaps three or four bars. The notes you need to analyse will be clearly bracketed. The people who set the Papers can often 'tease' exam candidates by using accidentals earlier in the bar. Does the key signature change at some point in the extract? Remember to look out for these things.

⇒ Which clef is being used? Has it changed part of the way across the staff?

⇒ Make sure you use the word *Compound* if necessary.

⇒ 4ths, 5ths, 8ves, 11ths, 12ths and 15ths can *never* be described as Major nor Minor Intervals.

⇒ Always count upwards from the bottom note to the top. It does not matter if the bottom note is on the left or the right of the two selected notes - *always* consider whether the top note is in the major scale of the bottom note.

⇒ Do not guess an answer, even if it seems similar to one you have answered in the past! Work from the notes of the major scale and then semitone by semitone arrive at the notes that you are considering. If you write each step down on the rough manuscript paper you will be supplied with in the exam, then checking your answer will take only a short time.

Let me know if there is anything you don't understand on these six pages.