GCSE Boot Camp

Higher Maths Week 2 Workbook

Questions

GCSE Boot Camp

Topics

Hello! Welcome to week 2 of your 8 week GCSE Boot Camp.

Every week you'll get a practice workbook to work through a range of topics, taken from our GCSE Higher Intermediate course.

We've also included links to 2 of our expert tutorial videos on some of these exact questions. That way, if you get stuck, you can try watching one of our tutorial videos with our Maths expert Patricia. For <u>full access to all of the corresponding videos</u> sign up for a SchoolOnline subscription from £8.99 a month.

In next week's email we'll send you the answers to this workbook to download *PLUS* a brand new workbook to practice.
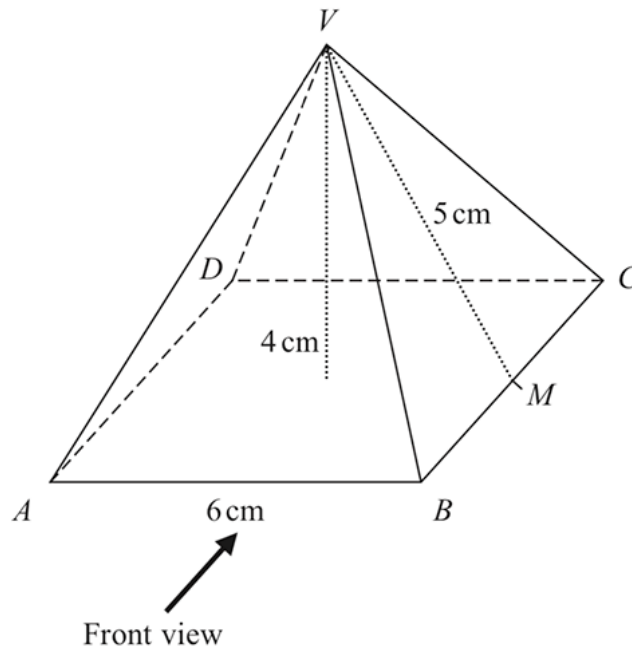
Your week 2 workbook topics are:

- Angles and Geometry
- Probability and Statistics

SMARTER LEARNING BETTER GRADES

5   Here is a solid square-based pyramid, *VABCD*.
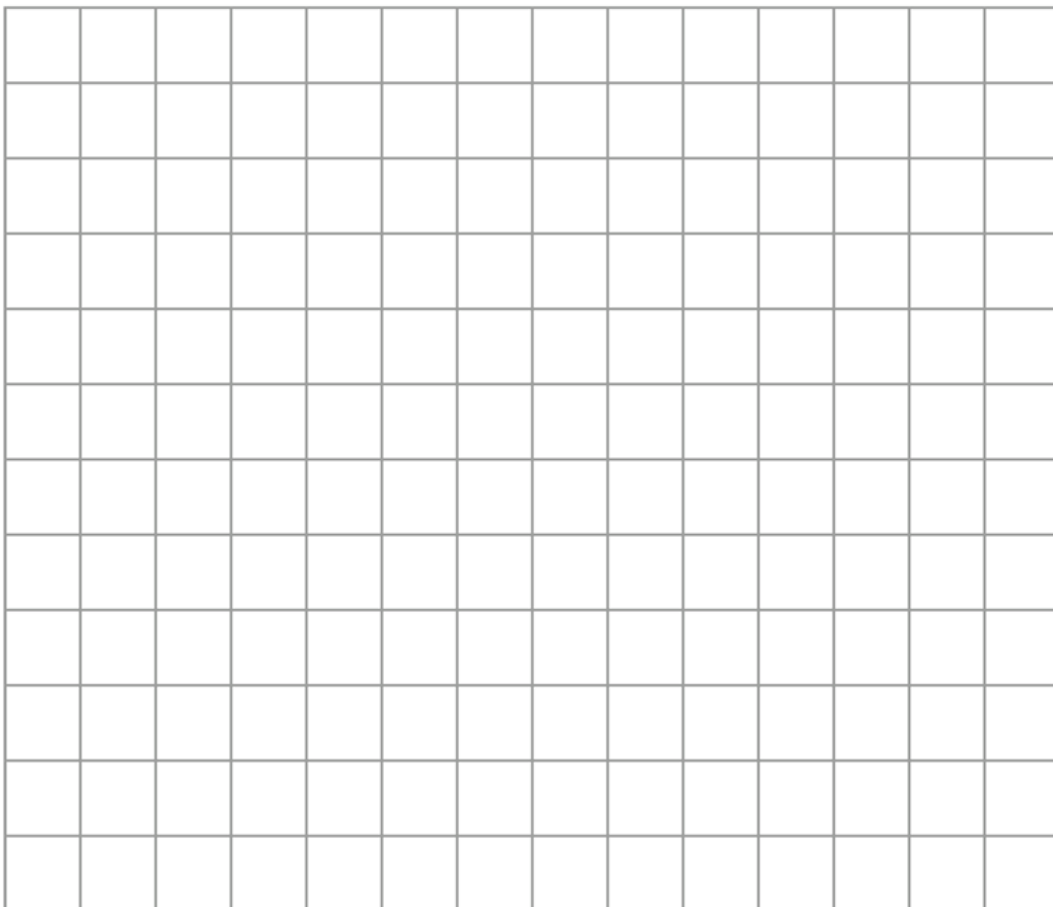

The base of the pyramid is a square of side 6 cm.
The height of the pyramid is 4 cm.
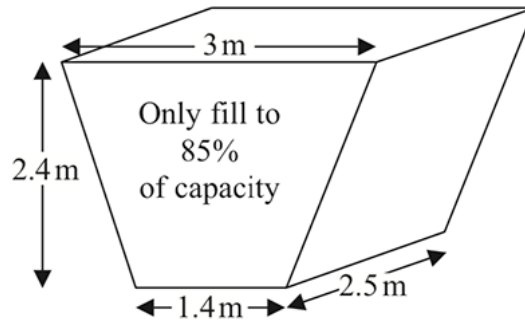*M* is the midpoint of *BC* and *VM* = 5 cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.

8 The diagram shows an oil tank in the shape of a prism.
The cross section of the prism is a trapezium.

The tank is empty.

Oil flows into the tank.
After one minute there are 300 litres of oil in the tank.

Assume that oil continues to flow into the tank at this rate.

(a) Work out how many **more** minutes it takes for the tank to be 85% full of oil.
($1 \, m^3$ = 1000 litres)

.... minutes

(5)

The assumption about the rate of flow of the oil could be wrong.

(b) Explain how this could affect your answer to part (a).

....

....

(1)

(Total for Question 8 is 6 marks)

Sample B Higher Non-Calc Paper 1

2 The diagram shows a square with perimeter 16 cm.
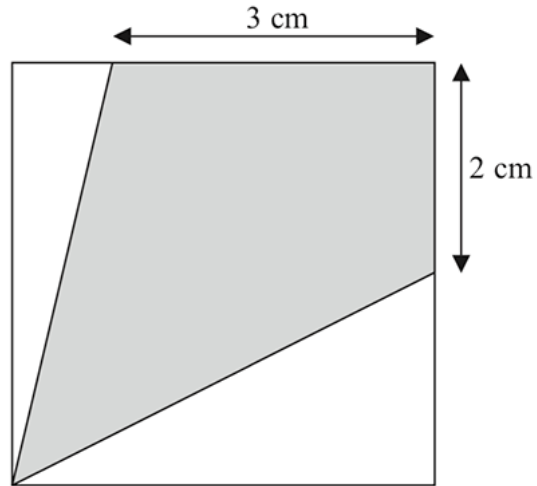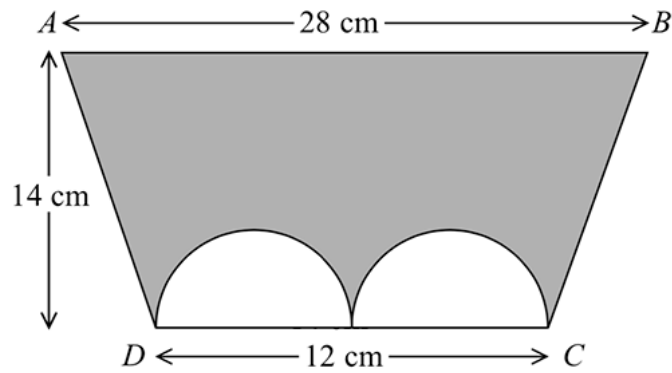

Work out the proportion of the area inside the square that is shaded.

....

(Total for Question 2 is 5 marks)

Area of irregular shapes

Sample A Higher Calc Paper 3

1 The diagram shows a trapezium *ABCD* and two identical semicircles.

The centre of each semicircle is on *DC*.

Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

.... cm^2

(Total for Question 1 is 4 marks)

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GCSE MATHEMATICS
PAPER 1 (Non-Calculator)

5 (a)

Here is a solid square-based pyramid, *VABCD*.

The base of the pyramid is a square with
side 6 cm.
The height of the pyramid is
M is the midpoint of *BC* and

(a) Draw an accurate front
the pyramid from the direct
arrow.

(b) Work out the total surface area of the
pyramid.

Click to play!

**Need some extra help? That's what we're here for!**

In this video Patricia will explain how to answer the first
question on the Geometry section of your workbook (Q5)
which looks at 3D Shapes and surface area.

Grab your pen and paper and remember to take notes! If you
want more access to awesome videos like this, sign up for a
full SchoolOnline subscription here.

$$6x_2 - 2x_3 + x_4 = 7$$

$$2x - 3x = 13$$

NOTES

18 The box plot shows information about the number of countries competing in each Winter Olympic Games since 1948

Number of countries in the Winter Olympics
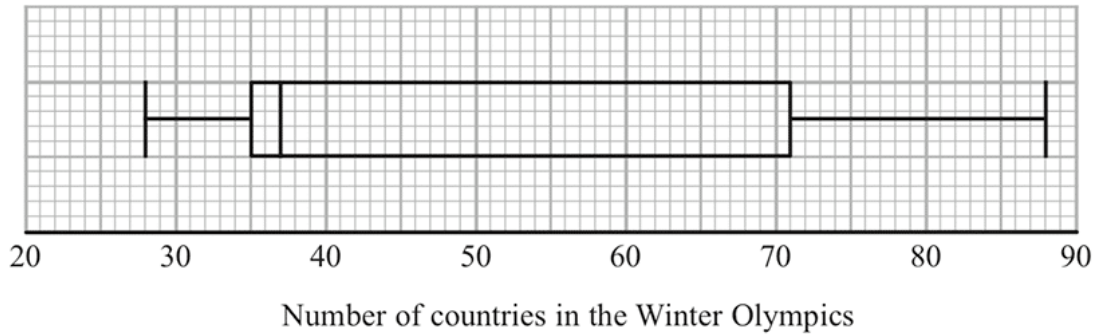
(a) Write down the median.

....

(1)

(b) Work out the interquartile range.

....

(2)

The table below shows information about the number of countries competing in each Summer Olympic Games since 1948

	Smallest	Lower quartile	Median	Upper quartile	Largest
Number of countries	59	83	121	199	204

*(c) Compare the two distributions.

....

....

....

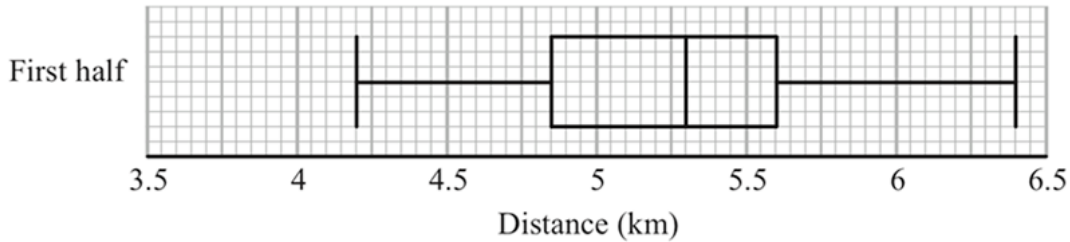..

(2)

(Total for Question 18 is 5 marks)

16 Colin took a sample of 80 football players.

He recorded the total distance, in kilometres, each player ran in the first half of their matches on Saturday.

Colin drew this box plot for his results.

(a) Work out the interquartile range.

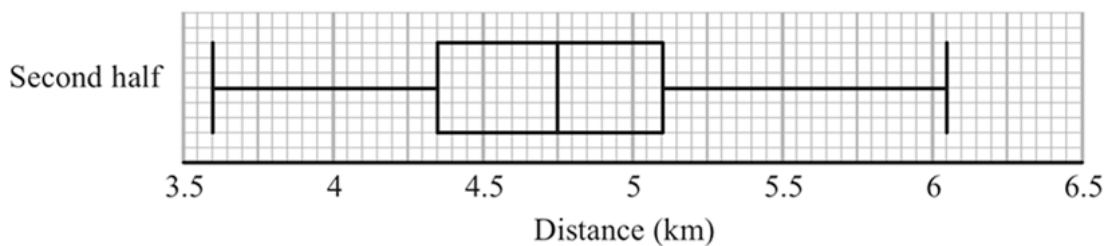... km

(2)

There were 80 players in Colin's sample.

(b) Work out the number of players who ran a distance of more than 5.6 km.

....

(2)

Colin also recorded the total distance each player ran in the second half of their matches.

He drew the box plot below for this information.

(c) Compare the distribution of the distances run in the first half with the distribution of the distances run in the second half.
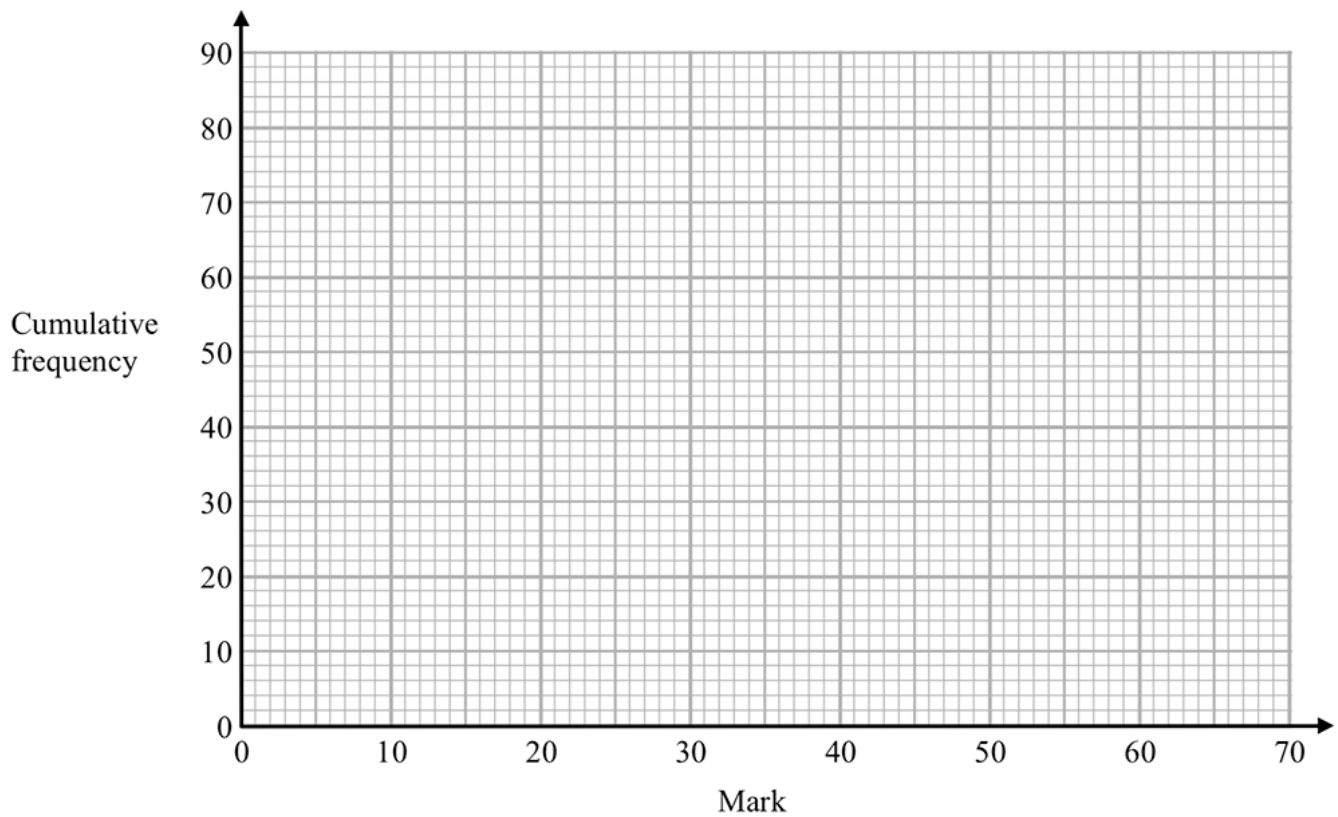
....

....

....

....

(2)

(Total for Question 16 is 6 marks)

Sample A Higher Calc Paper 3

7 The cumulative frequency table shows the marks some students got in a test.

Mark (m)	Cumulative frequency
$0 < m \leqslant 10$	8
$0 < m \leqslant 20$	23
$0 < m \leqslant 30$	48
$0 < m \leqslant 40$	65
$0 < m \leqslant 50$	74
$0 < m \leqslant 60$	80

(a) On the grid, plot a cumulative frequency graph for this information.

Cumulative frequency

Mark

(2)

(b) Find the median mark.

....

(1)

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Expert tutorial

Click to play!

Need some extra help? That's what we're here for!

In this video Patricia will explain how to answer the last question on the Probability and Statistics section of your workbook (Q7) which looks at Cumulative Frequency Graphs.

Grab your pen and paper and remember to take notes! If you want more access to awesome videos like this, <u>sign up for a full SchoolOnline subscription here.</u>

$$6x_2 - 2x_3 + x_4 = 7$$

$$2x - 3x = 13$$

NOTES