



Personalised Question Booklet for Sample Student 1

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CONTENTS

Topic 1: Reverse Percentage.

Matchwatch clip: 138

Topic 2: Standard Form.

Matchwatch clip: 135

Topic 3: Harder $y=mx+c$.

Matchwatch clip: 166

Topic 4: Box plots.

Matchwatch clip: 152

Topic 5: Upper and Lower Bounds.

Matchwatch clip: 158

Topic 1: Reverse Percentage.



Video Notes

1. A shop offers 25% discount on its products in the January Sale. A Sofa costs £450 in the sale. How much did it cost originally?

..... (3)

2. A low fat yoghurt claims to have 20% less fat than its full fat equivalent. The low fat yoghurt has 12g of fat. How much does the full fat equivalent have?

..... (3)

3. A telephone company comes up with a strategy that reduces their customers wait time by 30%. After they have implemented the strategy a customer waits for 14 minutes. How long would they have waited for before the strategy was implemented?

..... (3)

Topic 1: Reverse Percentage.



4. A tax on sugary products at 5% is implemented by a new government. After the tax a chocolate bar costs 84p. How much has it increased by in pence?

..... (3)

5. A smartphone depreciates in value every year by 25%. After 2 years the value of the smartphone is £236.25. What was its value when new?

..... (3)

Topic 1: Reverse Percentage.



*6. Two cities have different population growths

<p>CITY A</p> <p>Growth 2% per year</p>
--

<p>CITY B</p> <p>Growth 5% Per year</p>
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At the end of 2015 the population of City A was 20400, and the population of City B was 20475. By how much did the populations differ at the end of 2014?

..... (4)

Topic 2: Standard Form.



Video Notes

1. (a) Write the number 0.00037 in standard form.

(1)

.....

(b) Write 8.25×10^3 as an ordinary number.

(1)

.....

(c) Work out $(2.1 \times 10^8) \times (6 \times 10^{-5})$.
Write your answer in standard form.

(2)

.....

(4 marks)

2. (a) Write 6.43×10^5 as an ordinary number.

(1)

.....

(b) Work out the value of $2 \times 10^7 \times 8 \times 10^{-12}$.
Give your answer in standard form.

(2)

.....

(3 marks)

Topic 2: Standard Form.



3. (a) Write down the value of 10^0

.....
(1)

(b) Write 6.7×10^{-5} as an ordinary number.

.....
(1)

(c) Work out the value of $(3 \times 10^7) \times (9 \times 10^6)$
Give your answer in standard form.

.....
(2)

(4 marks)

4. (a) Write 8.2×10^5 as an ordinary number.

.....
(1)

(b) Write 0.000 376 in standard form.

.....
(1)

(c) Work out the value of $(2.3 \times 10^{12}) \div (4.6 \times 10^3)$
Give your answer in standard form.

.....
(2)

(4 marks)

Topic 2: Standard Form.



Worded Standard Form

1) The world's smallest snail travels 4×10^{-3} m a month.

How many months would it take for the snail to travel

2×10^{-1} m?

.....

.....

.....

.....

.....

2)

The time taken for light to reach Earth from the edge of the known universe is 14 000 000 000 years.

Light travels at the speed of 9.46×10^{12} km/year.

Work out the distance, in kilometres, from the edge of the known universe to Earth.
Give your answer in standard form.

.....

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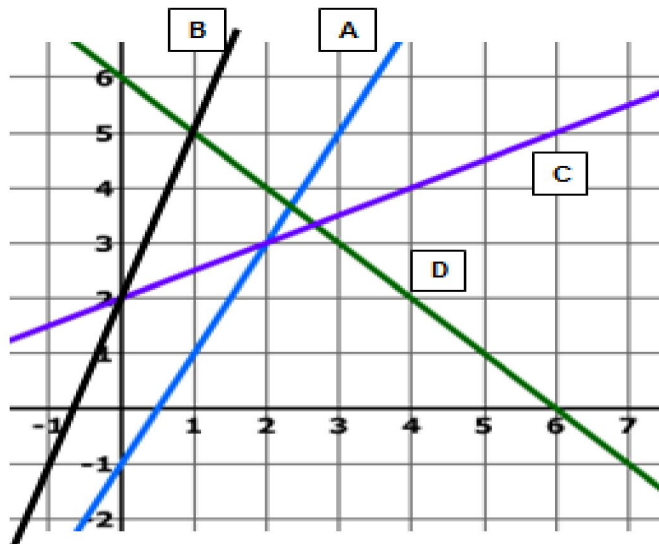
.....

Topic 3: Harder $y=mx+c$.



Video Notes

Find the Equation! - $y=mx+c$



Answers

A $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

B $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

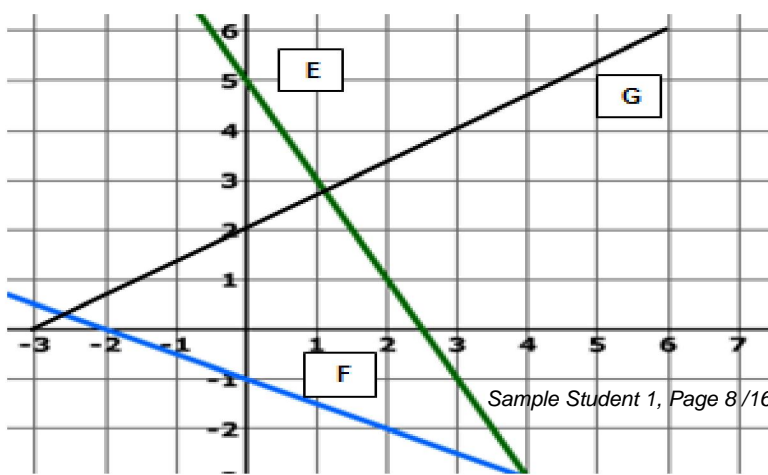
C $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

D $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

Part 2



E $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

F $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

G $m = \underline{\quad}$ $c = \underline{\quad}$

Equation
 $y = \underline{\quad}$

Topic 3: Harder $y=mx+c$.



- 1) Find the equation of a line parallel to $y = 4x + 3$ which passes through the point $(0,2)$.

.....
.....
.....
.....

(2 Marks)

- 2)

Question

Find the gradient of the line which goes through these points

$(1, 4)$ $(5, 28)$

.....
.....
.....
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(3 Marks)

- 3) Find the equation of a line with gradient 1 passing through $(5,2)$

.....
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(3 Marks)



Topic 3: Harder $y=mx+c$.

4) Find the equation of a Line with gradient 2 passing through (4,6)

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(3 Marks)

5). Find the equation of a line passing through (4,6) and (6,12)

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(4 Marks)

6). What is the gradient of line perpendicular to $y = 3x + 1$ passing through (1, 9)?

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(5 Marks)

Topic 4: Box plots.



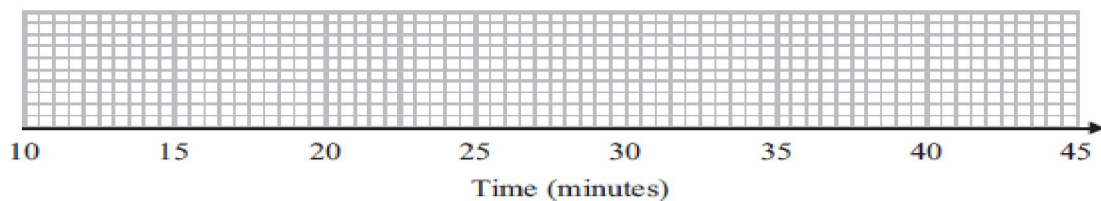
Video Notes

2. Sameena recorded the times, in minutes, some girls took to do a jigsaw puzzle.

Sameena used her results to work out the information in this table.

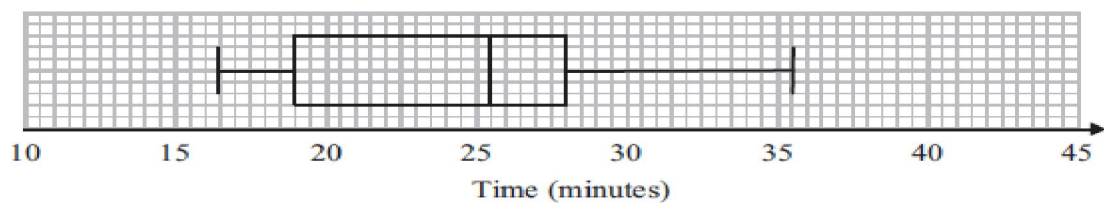
	Minutes
Shortest time	18
Lower quartile	25
Median	29
Upper quartile	33
Longest time	44

- (a) On the grid, draw a box plot to show the information in the table.



(2)

The box plot below shows information about the times, in minutes, some boys took to do the same jigsaw puzzle.



- (b) Compare the distributions of the girls' times and the boys' times.

.....

.....

.....

.....

(2)

(4 marks)

Topic 4: Box plots.



1. Mary recorded the heights, in centimetres, of the girls in her class.

She put the heights in order.

132 144 150 152 160 162 162 167
 167 170 172 177 181 182 182

(a) Find

(i) the lower quartile,

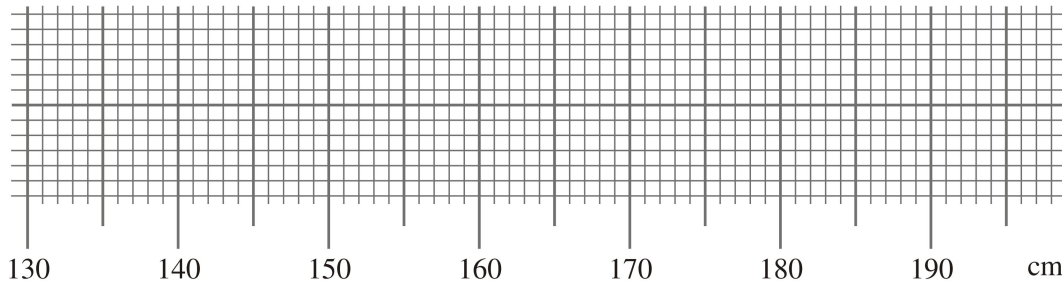
..... cm

(ii) the upper quartile.

..... cm

(2)

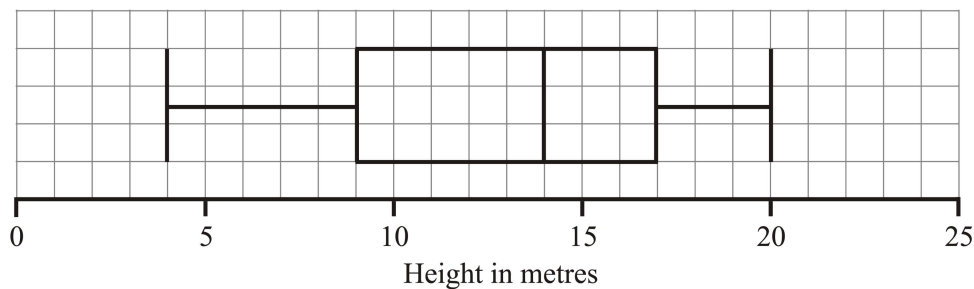
(b) On the grid, draw a box plot for this data.



(3)

(Total 5 marks)

4. The box plot gives information about the distribution of the heights of all the trees in a wood.



(a) Write down the median height of the trees.

..... m

(1)

(b) Work out the interquartile range of the heights of the trees.

..... m

(1)

There are 300 trees in the wood. *Sample Student 1, Page 12 /16*

(c) Work out the number of trees in the wood with a height of 17 m or more.

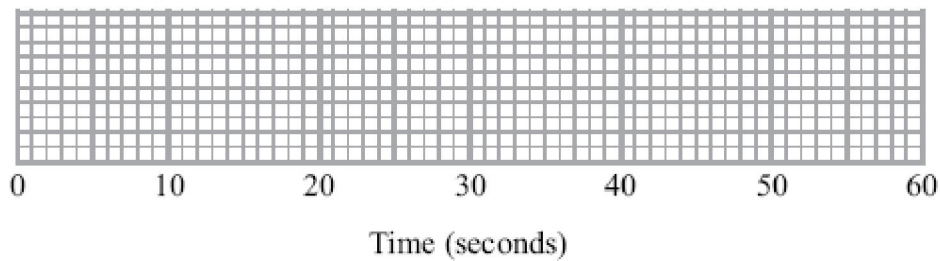
Topic 4: Box plots.



7. Here are the times, in seconds, that 15 people waited to be served at Rose's garden centre.

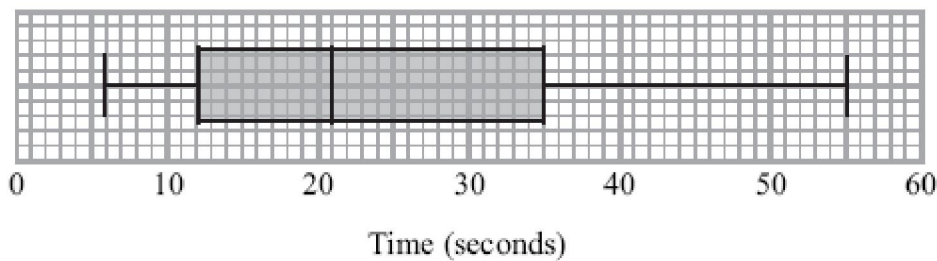
5 9 11 14 15 20 22 25 27 27 28 30 32 35 44

(a) On the grid, draw a box plot for this information.



(3)

The box plot below shows the distribution of the times that people waited to be served at Green's garden centre.



(b) Compare the distribution of the times that people waited at Rose's garden centre and the distribution of the times that people waited at Green's garden centre.

.....

.....

.....

.....

(2)

Topic 5: Upper and Lower Bounds.



Video Notes

1. The weight of a plasma TV is 12kg to the nearest kg.

a) What is the smallest possible weight of the TV?

..... (1)

b) What is the largest possible weight of the TV?

..... (1)

2. The height of a wardrobe is given as 253 cm to the nearest cm. What is the maximum height the wardrobe could be?

..... (1)

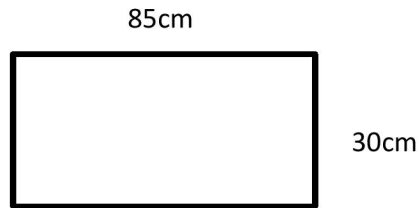
3. The number of people that attended a football fixture is given as 3200 to two significant figures. What is the minimum number of people that could have attended?

..... (1)

Topic 5: Upper and Lower Bounds.



4. The length of a rectangle shown below is given as 85cm. The width is 30cm. Both measurements are correct to the nearest cm.



- a) What is the upper bound for the area of the rectangle?

..... (3)

- a) What is the lower bound for the perimeter of the rectangle?

..... (3)

5. The length of a rectangular TV screen is given as 80cm to the nearest 5cm, the height is given as 66cm to two significant figures. Calculate the lower bound of the perimeter of the TV.

Topic 5: Upper and Lower Bounds.



8. The formula for density is

$$D = \frac{M}{V}$$

V is the volume of the object, M is the mass and D the density.

The Volume of a liquid is given as 500ml to the nearest 10ml and the Mass of the liquid is 600g to nearest gram

By considering bounds, give the Density of the drink to a suitable degree of accuracy. You must show all of your working and give a reason for your answer

.....g/ml **(4)**

*9. Sabrina is decorating and is painting a feature wall. The measurements of the wall are shown below to the nearest 0.1m. A pot of paint covers 12m² of wall to the nearest 1m². By considering bounds, does Sabrina definitely have enough paint to cover the wall with one pot?

