

Pop Quiz: Comparing Averages

Name:

(1) Here are the number of cars sold by a garage every day over the course of a week.

2 3 2 4 2 3 4

(a) Calculate the median.

.....
.....

(b) Calculate the mean.

(c) Calculate the mode.

.....

(d) From the viewpoint of the garage owner, which average shows that the business has performed the best?

[6]

(2) Which average is most appropriate for the following data sets?

(a) Favourite type of music:

Rock, Pop, Rap, Rock, Pop, Reggae, Jazz, Dance

(b) Daily rainfall in Llandudno:

1.2 mm, 2 mm, 0.4 mm, 0 mm, 24 mm, 1 mm

.....

[2]

(3) Susan thinks of 5 whole numbers. The median of the numbers is 8. The mode of the numbers is 5. The range of the numbers is 5. What are Susan's numbers?

[4]

(4) Class 10C measured how long each of them could keep quiet during a lesson. The table on the right shows how many minutes they managed to keep quiet.

Time, t , in minutes	Frequency
$0 < a \leq 10$	9
$10 < a \leq 20$	5
$20 < a \leq 30$	4
$30 < a \leq 40$	3
$40 < a \leq 50$	6

(a) What is the modal class?

.....

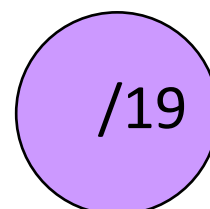
(b) What is the median class?

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(c) Calculate an estimate for the mean time spent being quiet.

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[7]



Pop Quiz: Questionnaires

Name:

(1) A survey was carried out in Llandudno in North Wales to find out the opinion of people on holding Welsh football games in Cardiff.

Question 1. In your opinion, is it right to play all the Welsh football games down in Cardiff, which makes it difficult for people from North Wales to attend the games?

YES

☐

NO

☐

Question 2. How often have you visited Cardiff City Stadium?

1-5 times

☐

6-10 times

☐

10 times or more

☐

Question 3. Which bank do you use?

.....

(a) Write down **one** criticism of the first question.

[1]

.....
.....

(b) Give **two** reasons why the second question **isn't** appropriate.

[2]

(i)

(ii)

(c) Give **two** reasons why the third question **isn't** appropriate.

[2]

(i)

(ii)

(d) Write down one criticism about **where** the survey was held.

[1]

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.....

Pop Quiz: Frequency Polygons

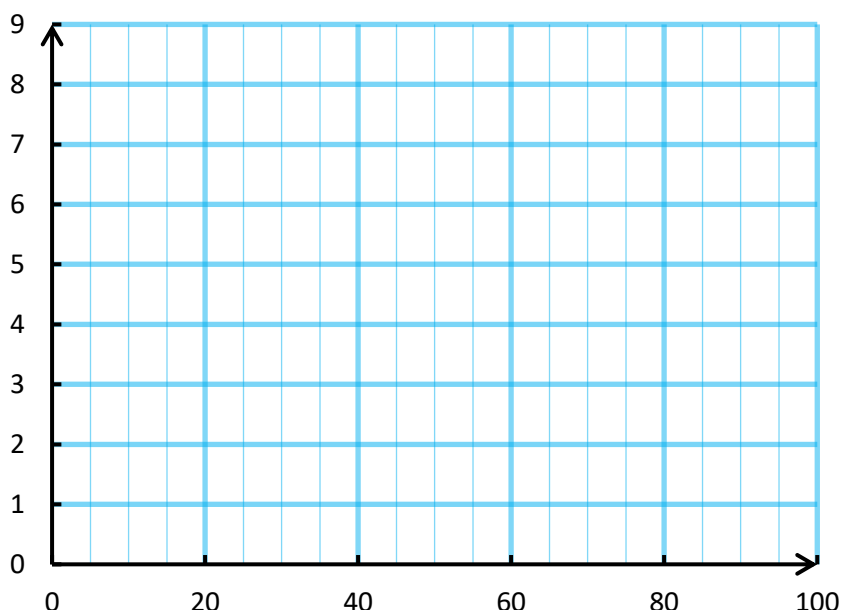
Name:

- (1) The table below shows the time (in minutes) class 10E spent revising for their science test.

Time (t)	Frequency
$0 \leq t < 20$	6
$20 \leq t < 40$	2
$40 \leq t < 60$	5
$60 \leq t < 80$	8
$80 \leq t < 100$	3

- (a) On the graph paper on the right, draw a frequency polygon for the data.

[4]



Alaw spent exactly 40 minutes revising. Does Alaw appear in the class $20 \leq t < 40$, or in the class $40 \leq t < 60$?

[1]

(c) How many people spent an hour or more revising?

[1]

(d) Eurgain said "Six people did not revise at all".

(i) Explain why Eurgain could be telling the truth.

.....

(ii) Explain why Eurgain could be telling a lie.

.....

[2]

(e) What is the modal class for the data?

.....

[1]

(f) Calculate an estimate for the range of the time spent revising.

.....

[1]

/10

Pop Quiz: Rules of Indices

Name:

(1) Pair the following expressions together.

$$n^a \times n^b$$

$$n^{a-b}$$

$$n^a \div n^b$$

$$n^{a+b}$$

$$(n^a)^b$$

$$n^{a \times b}$$

[3]

(2) Evaluate the following, without using a calculator.

(a) 4^3

(b) $2^5 + 5^2$

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.....

[3]

(3) Simplify each of the following expressions.

(a) $8^4 \times 8^3$

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.....

(b) $4^6 \div 4^2$

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.....

(c) $2^8 \div 2^4 \times 2^{10}$

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.....

(d) $(4^3)^4$

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.....

[4]

(4) Simplify each of the following algebraic expressions.

(a) $x^4 \times x^5$

(b) $y^8 \div y^2$

.....
.....

(c) $10z^6 \times 3z^2$

(d) $\frac{24a^{12}b^2}{12a^3b}$

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.....

[4]

Pop Quiz: Graph Plotting Name:

/8

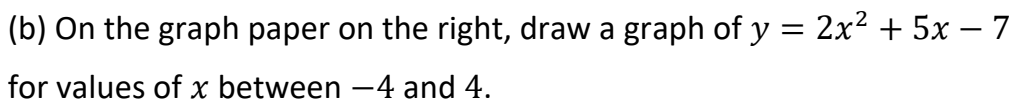
- (b) If $y = x^2 + 5$, what is the value of y if $x = -2$?

[2]

- -4 and 4 .

(a) Complete the table to find the value of y if $x = -3$ and $x = 2$.

- (a) Complete the table to find the value of y if $x = -3$ and $x = 2$.

[illegible]

- Give your answers correct to 1 decimal place.

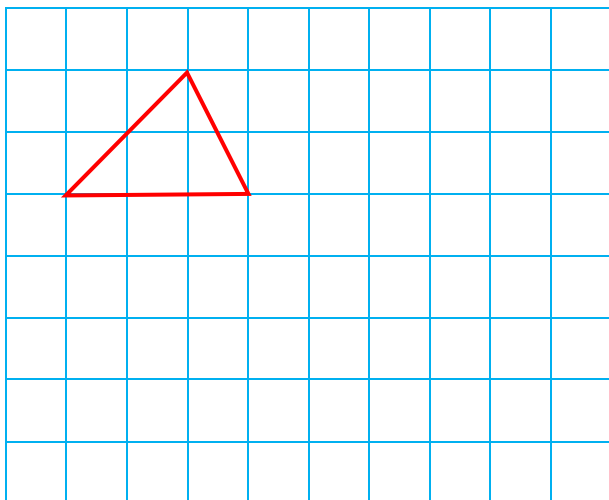
[6]

Pop Quiz: Enlargement

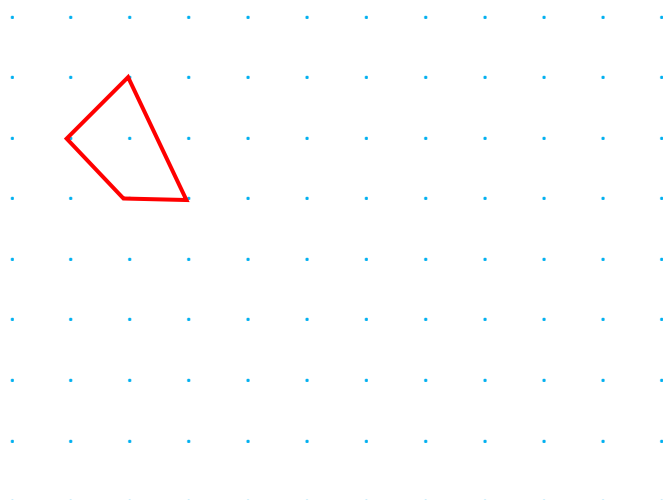
Name:

/10

(1) (a) Enlarge the triangle below using a scale factor of 2.

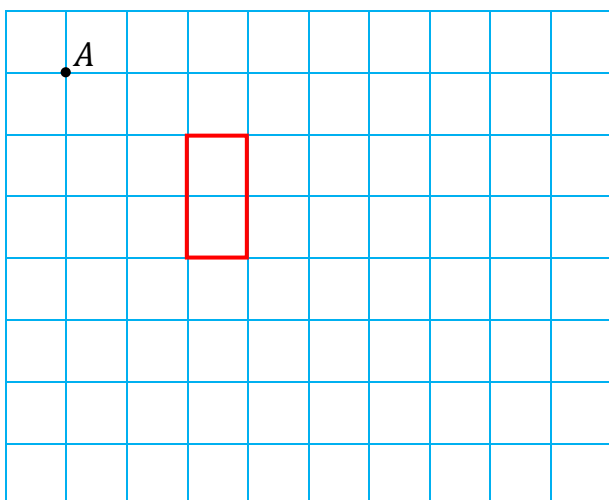


(b) Enlarge the quadrilateral below using a scale factor of 3.

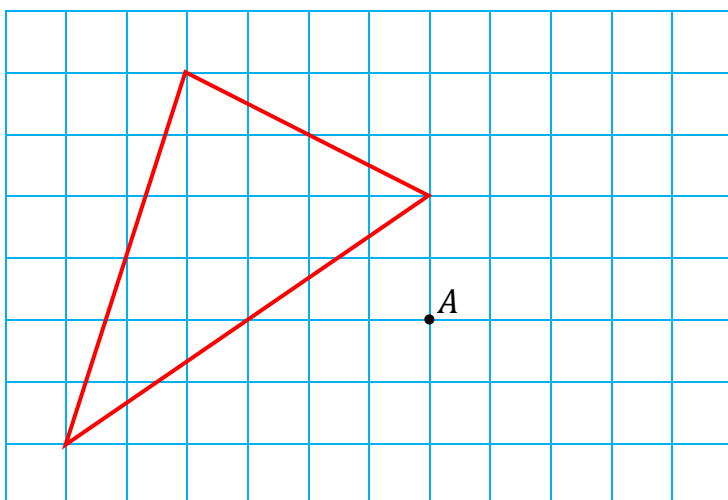


[2]

(2) (a) Enlarge the quadrilateral below using a scale factor of 2, and the point A as the centre of enlargement.



(b) Enlarge the triangle below using a scale factor of $\frac{1}{2}$, and the point A as the centre of enlargement.



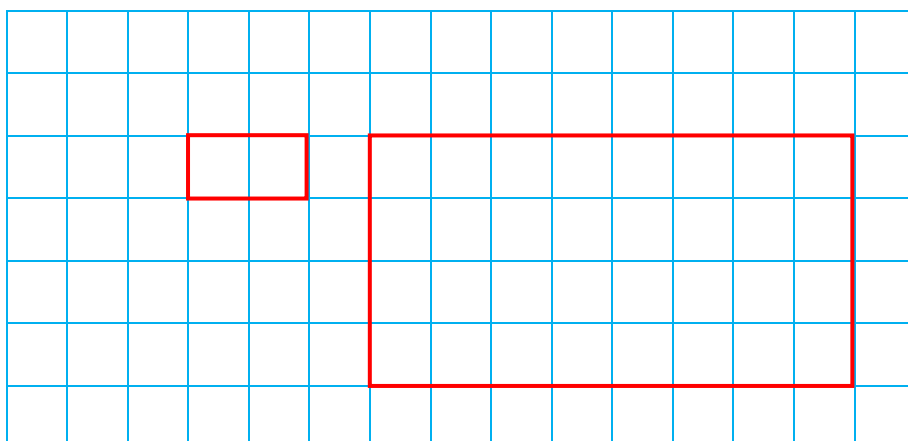
[6]

(3) (a) Find the scale factor for the enlargement shown on the right.

Scale factor = ...

(b) Mark the centre of enlargement using a cross.

[2]



Pop Quiz: Composite Shapes

Name:

(1) Pair the name of the shape with its correct area formula.

Rectangle

Base $\times$ Height

Triangle

$\pi \times \text{Radius}^2$

Parallelogram

Length $\times$ Width

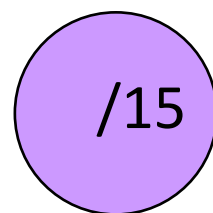
Trapezium

$\frac{\text{Base} \times \text{Height}}{2}$

Circle

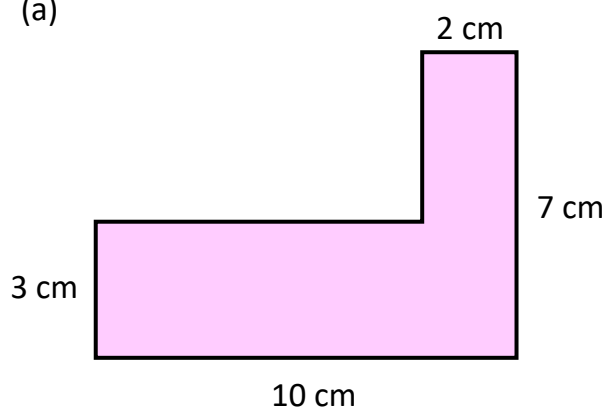
$\frac{1}{2}(a + b) \times \text{Height}$

[5]

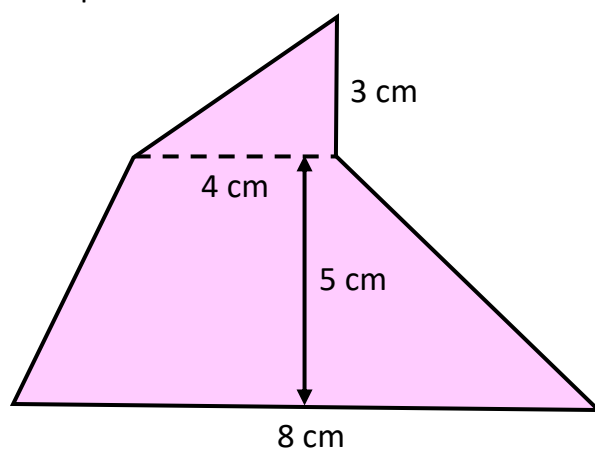


(2) Calculate the area of each of the following composite shapes.

(a)



(b)



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..... [6]

(3) What is the area of the coloured region?

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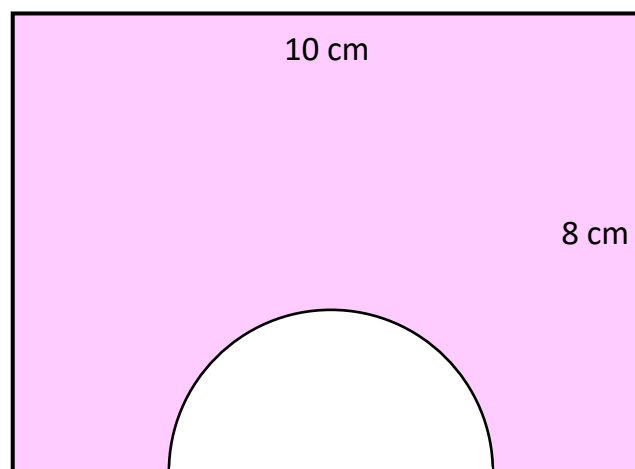
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..... [4]



The diameter of the half circle is 5 cm

Pop Quiz: Calculations

Name:

/12

(1) Calculate the following without using a calculator.

(a) 4.2×100

(b) 63×29

(c) $\frac{2}{9} + \frac{1}{3}$

.....

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[3]

(2) Megan receives singing lessons from Mrs Jones.

One lesson costs £27. If Megan buys 5 lessons in advance, she receives a 15% discount on the total price. How much does Megan pay for 5 singing lessons, paying in advance?



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[3]

(3) Deian buys a new mobile phone costing £240. Nine months later, he sells the phone on the internet, making a loss of $\frac{5}{12}$ of the original price. How much money did Deian receive on selling the phone?

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[3]

(4) Calculate the following using a calculator.

(a) $36\% \text{ of } £52$

(b) $\frac{4}{5} \div \frac{8}{9}$

(c) $\frac{11}{13} \text{ of } 54.6$

.....

.....

[3]

Pop Quiz: Recurring Decimals

Name:

(1) Convert the following fractions to decimals.

(a) $\frac{9}{10} =$

(b) $\frac{6}{100} =$

(c) $\frac{63}{100} =$

(d) $\frac{437}{1000} =$

(e) $\frac{4}{1000} =$

(f) $\frac{43}{1000} =$

[6]

(2) Convert the following fractions to decimals.

(a) $\frac{3}{5} =$

(b) $\frac{8}{25} =$

(c) $\frac{47}{50} =$

(d) $\frac{12}{250} =$

[4]

(3) Write the following recurring decimals using dot notation.

(a) $0.8888 \dots =$

(b) $0.6272727 \dots =$

(c) $0.482482482 \dots =$

(d) $0.7281767676 \dots =$

[4]

(4) Use a division frame to write the following fractions as recurring decimals, using dot notation.

(a) $\frac{7}{9}$

(b) $\frac{2}{7}$

Answer:

Answer:

[4]

(5) Determine whether the following fractions convert to terminating decimals or to recurring decimals.

(a) $\frac{21}{28}$

(b) $\frac{4}{30}$

Answer:

Answer:

[4]

Pop Quiz: Converting

Name:

/29

(1) Fill in the following blanks using the words “multiply” and “divide”.

To change a percentage to a decimal, you must by 100.

To change a decimal to a percentage, you must by 100.

[2]

(2) Complete the following table.

Fraction	Percentage	Decimal
	31%	
	6%	
	120%	
$\frac{17}{100}$		
$\frac{9}{100}$		
$\frac{21}{50}$		
$\frac{5}{2}$		
		0.43
		0.7
		1.02

[20]

(3) Write 62%, $\frac{3}{5}$, 0.58 in ascending order.

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.....

[3]

(4) Circle each number that has the same value as 80%.

0.08

 $\frac{8}{10}$

0.8

 $\frac{10}{8}$ $80 \div 100$ $\frac{4}{5}$ $\frac{80}{1000}$

[4]

Pop Quiz: Efficient Percentage Changes

Name:

(1) Complete the following table.

Original Price	Original Percentage	Percentage Change	New Percentage	Sum to Find the New Price	New Price
£320	100%	Increase 30%	130%	$£320 \times 130\%$	£416
£280		Increase 20%			
£870		Decrease 10%			
\$5,200		Decrease 27%			

[6]

(2) Use an efficient method to answer the following questions.

(a) Jenny buys a second-hand car for £16,000. Each year, the value of the car depreciates 15%. What value will the car have after three years?

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 [2]

(b) George borrows £12,000 from Barclays Bank at a compound interest rate of 5% a year. George wants to pay back all the money after four years. How much money will George have to pay back after four years?

.....

 [2]

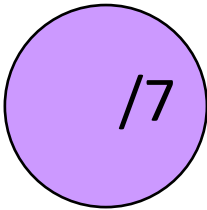
(c) The number of subscribers to a popular YouTube channel has increased by a $\frac{1}{3}$ each month over the past six months. If the channel had 729,000 subscribers six months ago, how many subscribers does the channel have now?

.....

 [2]

Pop Quiz: Exam Technique

Name:



Use 8 minutes or less to answer the following question...

(1) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Rita gives some money to charity.

She decides to share this money between 3 different charities.

Rita gives \$40 to a children’s charity.

This is $\frac{1}{5}$ of the total amount of money she gives to the 3 charities.

Rita gives $\frac{1}{4}$ of the total amount of money to an animal charity.

She gives the remaining money to a medical research charity.

Calculate how much money Rita gives to the medical research charity.

You must show all your working.

[5 + 2 QWC]

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(2) Use the marking scheme to see how many marks you would have earned by answering the above question.

Pop Quiz: Changing the Subject

Name:

/14

(1) Make x the subject of the formula $y = 3x + 4$.

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.....
..... [2]

(2) Make y the subject of the formula $4x - 3y = 25$.

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.....
..... [2]

(3) Make a the subject of the formula $V = abc$.

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.....
..... [1]

(4) Make u the subject of the formula $A = \frac{su}{2}$.

.....
.....
..... [2]

(5) Make c the subject of the formula $E = mc^2$.

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.....
..... [2]

(6) Make x the subject of the formula $\sqrt{x} = y$.

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.....
..... [1]

(7) Make x the subject of the formula $\sqrt{x} + y = z$.

.....
.....
..... [2]

(8) Make c the subject of the formula $y = a(b + c)$.

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..... [2]

Pop Quiz: Foundation Tier Solids

Name:

(1) (a) What is the volume of the cuboid on the right?

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(b) What is the surface area of the cuboid on the right?

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..... [7]

(2) Calculate the volume of the prism on the right.

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..... [4]

(3) Calculate the volume of the cylinder on the right.

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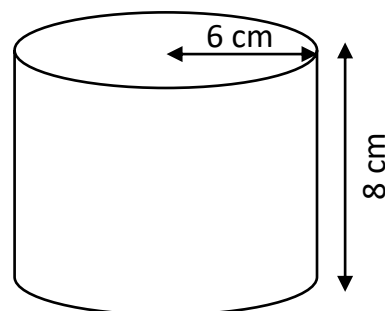
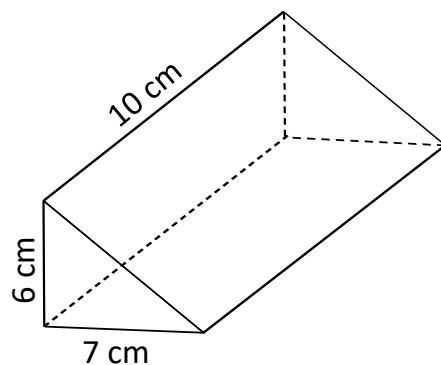
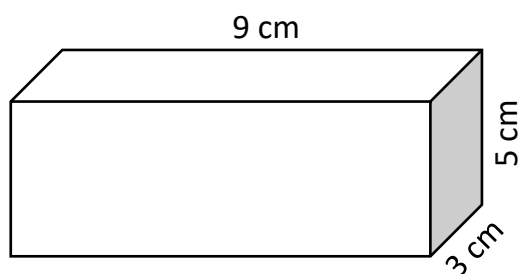
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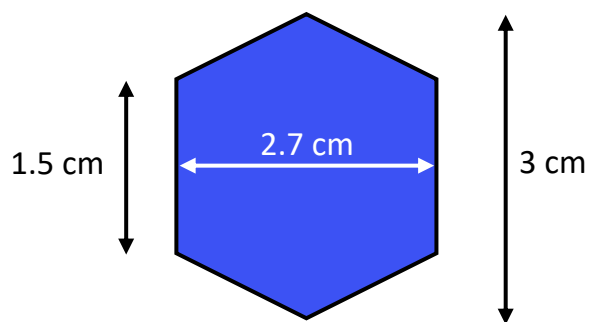
..... [3]



Pop Quiz: Foundation Tier Composite Solids

Name:

- (1) The packaging for Smarties sweets is shown on the right. The length of the packaging is 11.2 cm. The cross-section of the prism is hexagonal, with the measurements shown on the right. Calculate the volume of space inside the packaging.

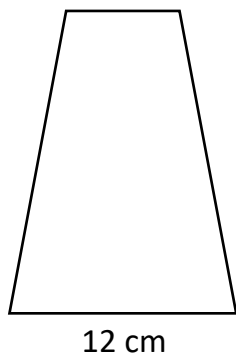
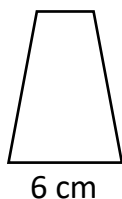


Pop Quiz: Foundation Tier Similar Shapes

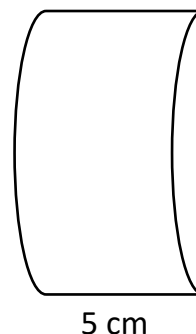
Name:

(1) The following pairs of shapes are similar. Use the measurements on the shapes to find the scale factor.

(a)



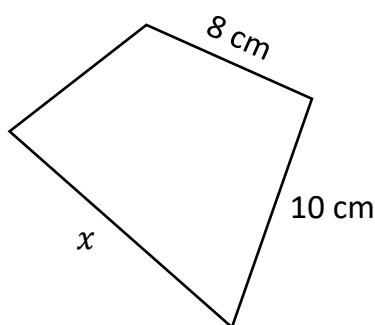
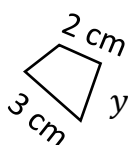
(b)



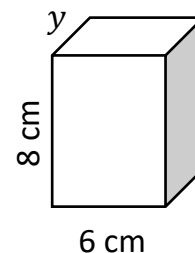
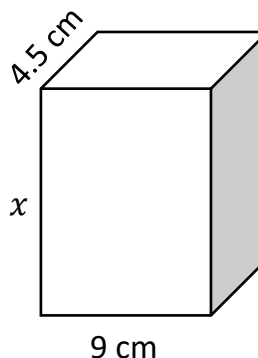
..... [2]

(2) The following pairs of shapes are similar. Use the measurements on the shapes to find the lengths x and y .

(a)

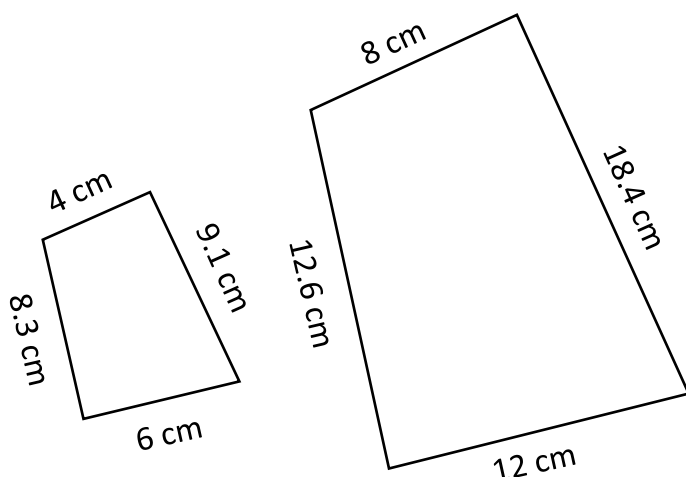


(b)



..... [6]

(3) Decide whether the following pair of shapes are similar or not.



..... [2]

Pop Quiz: Significant Figures and Estimation

Name:

(1) Complete the following table.

Original Number	Round off to one significant figure	Round off to two significant figures
6,934		
25,083		
8.72		
67,500,000		
0.003379		

[10]

(2) For the following numbers, circle the third significant figure.

(a) 9,427

(b) 0.0027832

(c) 53.2819

[3]

(3) Find an estimate for each of the following calculations.

(a) 618×265

(b) $\frac{42,589}{986}$

(c) $\frac{78 \times 0.53}{1.83}$

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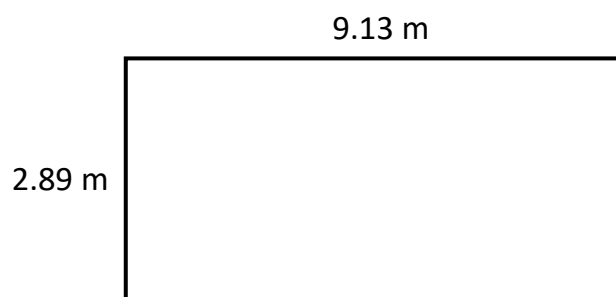
[7]

(4) The back wall of David's living room is a rectangle

with the measurements shown on the right.

David wants to paint the wall using paint that covers 10 m^2 per litre of paint.

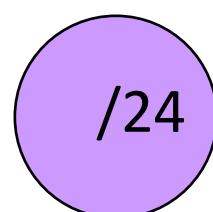
To the nearest litre, how much paint should David buy?



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.....

..... [4]



Pop Quiz: Appropriate Degree of Accuracy

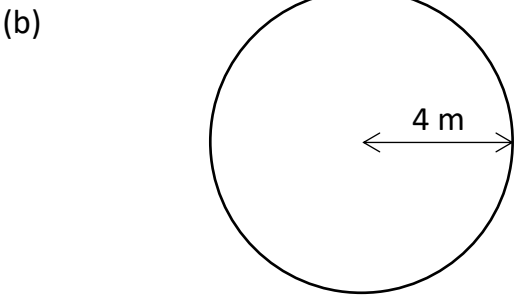
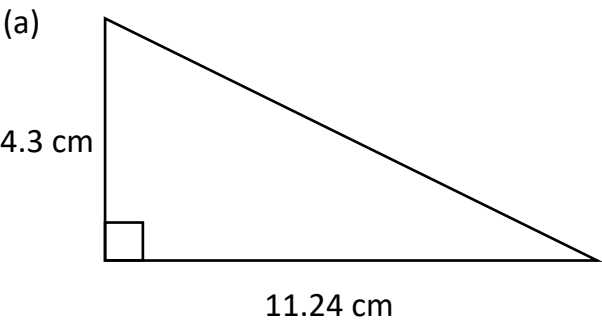
Name:

(1) The following table shows how the length and width of different rectangles have been measured. If the area of the rectangle is to be given to an appropriate degree of accuracy, how should it be rounded off? The first row has been completed for you.

Rectangle length	Rectangle width	Rectangle area
To one decimal place	To two decimal places	To one decimal place
To three decimal places	To one decimal place	
To the nearest whole number	To one decimal place	
To two decimal places	To two decimal places	
To three decimal places	To four decimal places	

[4]

(2) Calculate the area of the following shapes. **Give your answers to an appropriate degree of accuracy.**



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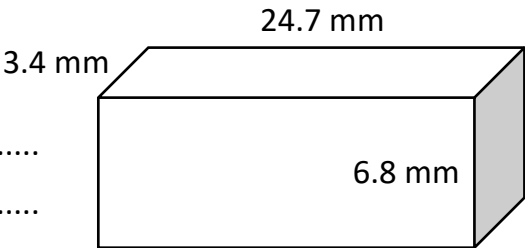
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[8]

(3) Calculate the volume of the cuboid on the right.

Give your answer to an appropriate degree of accuracy.



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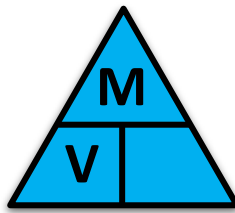
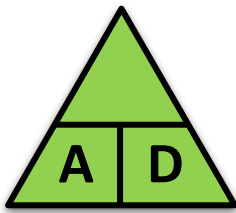
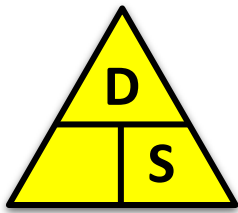
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[4]

Pop Quiz: Composite Measures

Name:

(1) Fill in the blanks in the triangles and formulae.



Distance = ... ×

Volume = ... ÷

..... = Area ×
Population Density

[6]

(2) A train travels 220 miles in 2 hours and 45 minutes.

What was the average speed of the train during its journey?

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

[3]

(3) The population density of Manchester is 12,210 people per square mile.

If 544,566 people live in Manchester, what is the area of Manchester?

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

[3]

(4) A cuboid made out of cork is shown on the right.

The volume of the block is 100 cm^3 and its mass is 23.5 grams.

(a) Calculate the density of the cuboid, in g/cm^3 .

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



(b) Given that the density of water is 1 g/cm^3 , what would happen to the cuboid of cork if it was put into a swimming pool? Circle the correct answer.

It would float

It would sink

[4]