GCSE MATHEMATICS

S21-C300

With Calculator Assessment Resource B

Foundation Tier

Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r^2$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement from the position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 = u^2 + 2as$$

1. *(a)* Write the number 20 056 in words. [1]

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(b) Here is an inequality.

$8 > 5$

Write in words what this inequality means. [1]

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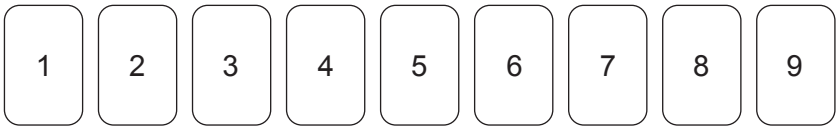
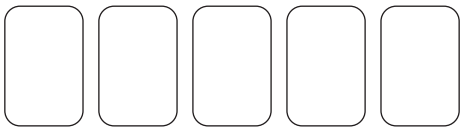
(c) Here are some number cards.



(i) Arrange five of these cards to make a 5-digit number so that there is:

- a 6 in the hundreds place,
- a 4 in the tens place.

Write your 5-digit number on the cards below. [1]



(ii) Multiply your answer to (i) by 10.
What is the new place value of the 6? [1]

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(d) Which of the fractions below has the same value as the 3 in 0·9375?
Circle your answer. [1]

$\frac{3}{10}$ $\frac{3}{1000}$ $\frac{3}{1}$ $\frac{3}{100}$ $\frac{3}{9}$

2. *(a)* Calculate 56% of 850. [2]

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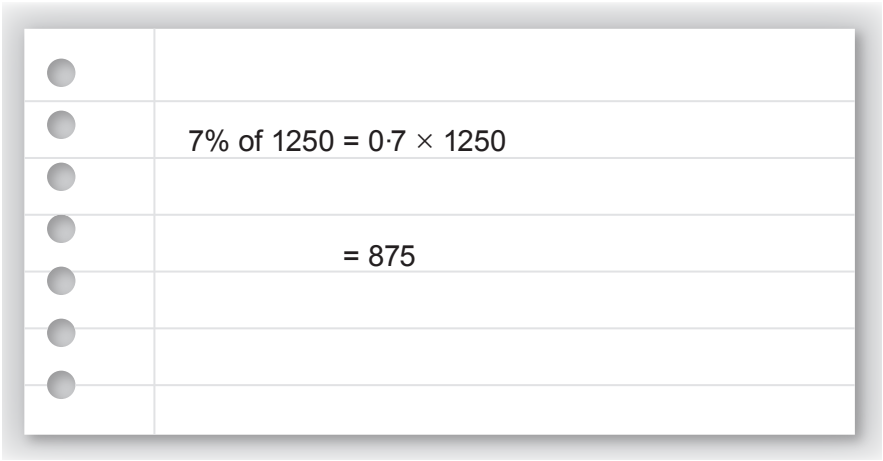
(b) Anoosha tries to calculate 7% of 1250.

She writes the following:



Anoosha is incorrect.
What should she have written? [1]

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(c) Dieter slept very well last night.

He says,

"I slept for 9 out of 24 hours, that's over 36% of a day."

Is Dieter correct?

Yes ☐ No ☐

Give a reason for your answer.
You must show all your working. [2]

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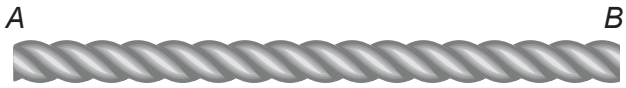
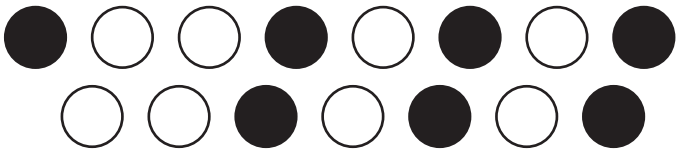
3. *(a)* The diagram below shows a piece of string, *AB*, that is 8 cm long.
The string is to be cut into two pieces in the ratio 1 : 3.

How far from *A* should the cut be made? [1]



Cut should be made ..... cm from *A*.

(b) The diagram below shows black and white counters.



Use the diagram to help you answer these questions.

(i) What fraction of the counters are black? [1]

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(ii) What is the ratio of the number of black counters to the number of white counters? [1]

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(iii) What is the smallest number of extra black and white counters that need to be added to the diagram above so that the ratio of black counters to white counters is 2 : 3? [2]

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Extra black ..... Extra white .....

(c) £85.75 is being shared between Zayn and Edith in the ratio 3 : 4.

How much money would each of them get? [3]

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4. Dave is thinking of a number.
The number is:

- greater than 200,
- less than 300,
- a square number,
- a multiple of 5.

What number is Dave thinking of? [2]

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Dave is thinking of the number .....

5. Shops A and B both sell identical boxes of washing powder.
Shop A sells boxes of washing powder at a discount of 30% when two boxes are bought.
Shop B sells the same boxes of washing powder in a 'Buy one, get the second half price' deal.

The two shops display these posters:

Shop A

Shop B

Does shop A or shop B offer the better value for money when buying two boxes?
Show how you decide. [5]

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6. *(a)* Calculate

$$\frac{2{\cdot}4^2}{3 \times 5{\cdot}1}$$

Give your answer correct to 2 decimal places. [2]

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(b) Calculate $(1{\cdot}8 \times 10^6) \times (2{\cdot}5 \times 10^8)$ giving your answer in standard form. [1]

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7. The rectangle below has a length of 12 cm and an area of 54 cm^2.

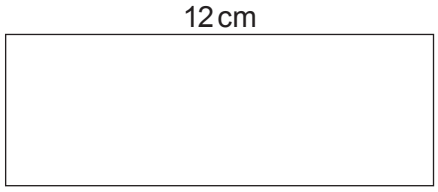

Diagram not drawn to scale

The rectangle is enlarged by a scale factor of 3.

Calculate the width of the enlarged rectangle. [3]

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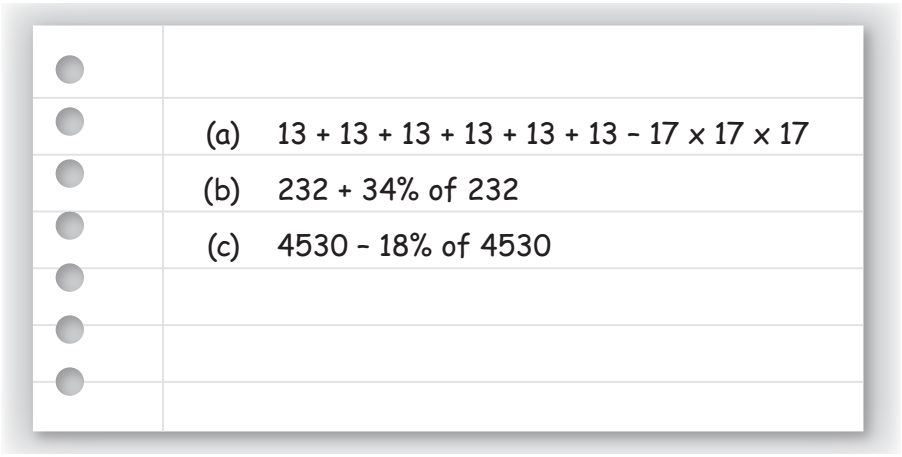
8. Harman has written some calculations he needs to work out for his homework.

Write down the calculation needed to work out each of the following using the fewest number of key presses. [4]

Give your answer to each question.



(a) .....

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Answer: .....

(b) .....

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Answer: .....

(c) .....

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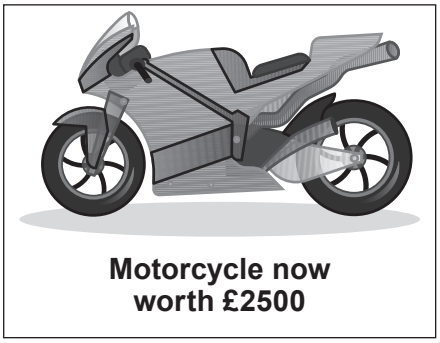
Answer: .....

9. This motorcycle depreciates by 16% per annum.



Motorcycle now worth £2500

After how many whole years will this motorcycle be worth less than £1000?
You must show all your working. [3]

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Motorcycle will be worth less than £1000 after ..... whole years.