

- 4 Daniel bakes 420 cakes.
He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

$\frac{2}{7}$ of the cakes are vanilla cakes.

35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5

Work out the number of lemon cakes Daniel bakes.

.....
(Total for Question 4 is 5 marks)



- 4 There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5

The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

(Total for Question 4 is 3 marks)

- 5 (a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

(1)

Jess rounds a number, x , to one decimal place.
The result is 9.8

- (b) Write down the error interval for x .

(2)

(Total for Question 5 is 3 marks)

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- 10** Robert makes 50 litres of green paint by mixing litres of yellow paint and litres of blue paint in the ratio 2:3

Yellow paint is sold in 5 litre tins.
Each tin of yellow paint costs £26

Blue paint is sold in 10 litre tins.
Each tin of blue paint costs £48

Robert sells all the green paint he makes in 10 litre tins.
He sells each tin of green paint for £66.96

Work out Robert's percentage profit on each tin of green paint he sells.

.....%

(Total for Question 10 is 5 marks)

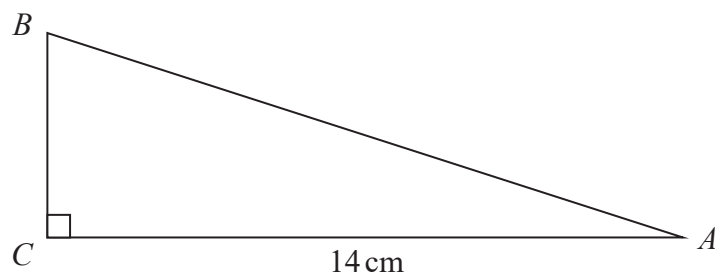
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- 6 ABC is a right-angled triangle.



$$AC = 14 \text{ cm.}$$

$$\text{Angle } C = 90^\circ$$

$$\text{size of angle } B : \text{size of angle } A = 3 : 2$$

Work out the length of AB .

Give your answer correct to 3 significant figures.

.....cm

(Total for Question 6 is 4 marks)



- 2 Deon needs 50 g of sugar to make 15 biscuits.

She also needs

three times as much flour as sugar

two times as much butter as sugar

Deon is going to make 60 biscuits.

- (a) Work out the amount of flour she needs.

..... g
(3)

Deon has to buy all the butter she needs to make 60 biscuits.

She buys the butter in 250 g packs.

- (b) How many packs of butter does Deon need to buy?

.....
(2)

(Total for Question 2 is 5 marks)



- 6 A shop sells packs of black pens, packs of red pens and packs of green pens.

There are

2 pens in each pack of black pens

5 pens in each pack of red pens

6 pens in each pack of green pens

On Monday,

number of packs : number of packs : number of packs
of black pens sold : of red pens sold : of green pens sold = 7:3:4

A total of 212 pens were sold.

Work out the number of green pens sold.

(Total for Question 6 is 4 marks)



17 Given that

$$x^2 : (3x + 5) = 1 : 2$$

find the possible values of x .

.....
(Total for Question 17 is 4 marks)



- 7 £360 is shared between Abby, Ben, Chloe and Denesh.

The ratio of the amount Abby gets to the amount Ben gets is 2:7

Chloe and Denesh each get 1.5 times the amount Abby gets.

Work out the amount of money that Ben gets.

£.....

(Total for Question 7 is 4 marks)

- 8 (a) Write 0.00562 in standard form.

.....
(1)

(b) Write 1.452×10^3 as an ordinary number.

.....
(1)

(Total for Question 8 is 2 marks)



- 5 Robyn buys a total of 240 pens and pencils, where

$$\text{number of pens} : \text{number of pencils} = 3 : 5$$

Robyn pays 9p for each pen.
She sells each pen for 11p.

Robyn pays 6p for each pencil.
She sells each pencil for 10p.

Robyn sells all of the pens and pencils.

Work out Robyn's percentage profit.
Give your answer correct to 1 decimal place.
You must show all your working.

.....%

(Total for Question 5 is 5 marks)



3. Prove $(n + 10)^2 - (n + 5)^2$ is always a multiple of 5



(4)

4. Prove the sum of two consecutive odd numbers is even.



(3)

11. Prove the product of three consecutive odd numbers is odd



(3)

12. Prove algebraically that the sum of the squares of two odd integers is always even.



(4)

13. Prove that when two consecutive integers are squared, that the difference is equal to the sum of the two consecutive integers.



(4)

14. Given x is a positive integer.



Prove that $(2x + 3)^2 - 3x(x + 2)$ is a square number.

(3)

15. Prove that the sum of the squares of 3 consecutive positive integers is always 1 less than a multiple of 3.



(4)

-
16. Prove algebraically that



$$(4n + 1)^2 - (2n - 1) \text{ is an even number}$$

for all positive integer values of n .

(4)

19. Prove that the product of two consecutive even numbers is a multiple of 4.



(3)

20. Prove that when any odd integer is squared, the result is always one more than a multiple of 8.



(4)