

January 2021 P1H

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Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Pieter owns a currency conversion shop.

Last Monday, Pieter changed a total of 20 160 rand into a number of different currencies.

He changed $\frac{3}{10}$ of the 20 160 rand into euros.

He changed the rest of the rands into dollars, rupees and francs in the ratios 9:5:2

Pieter changed more rands into dollars than he changed into francs.

Work out how many more.

$$\frac{3}{10} \times 20160 = 6048 \text{ into euro}$$

$$20160 - 6048 = 14112 \text{ rand left}$$

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$$\frac{14112}{16 \text{ boxes}} = 882 \text{ per box}$$

$$\text{Dollars} = 9 \times 882 = 7938$$

$$\text{Rupees} = 5 \times 882 = 4410$$

$$\text{Franc} = 2 \times 882 = 1764$$

..... 6174 rand

Dollars - Francs

(Total for Question 1 is 4 marks)

$$7938 - 1764 = 6174$$



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Answer ALL TWENTY THREE questions.

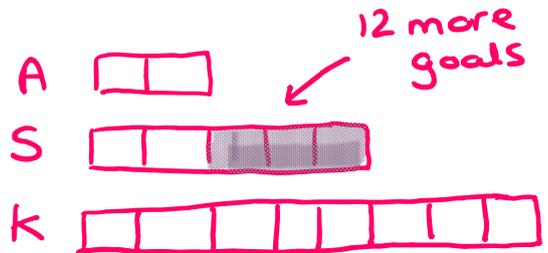
Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Last season, the number of goals scored by Arjun, by Simon and by Kath for their football team were in the ratios 2:5:8

Simon scored 12 more goals than Arjun.

Work out the number of goals scored by Kath.



$$\frac{12}{3 \text{ boxes}} = 4 \text{ per box}$$

$$\text{Arjun} = 2 \times 4 = 8 \text{ goals}$$

$$\text{Simon} = 5 \times 4 = 20 \text{ goals}$$

$$\text{Kath} = 8 \times 4 = 32 \text{ goals}$$

32

(Total for Question 1 is 3 marks)



P 7 2 7 9 0 A 0 3 2 8

January 2020 Paper 1HR

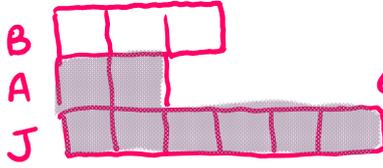
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- 1 Brendon, Asha and Julie share some money in the ratios 3 : 2 : 6
The **total** amount of money that Asha and Julie receive is \$36

Work out the amount of money that Brendon receives.



$$\text{Asha} + \text{Julie} = \$36$$

$$\frac{36}{8 \text{ boxes}} = 4.5 \text{ per box}$$

$$B = 3 \times 4.5 = \$13.5$$

$$A = 2 \times 4.5 = \$9$$

$$J = 6 \times 4.5 = \$27$$

\$ 13.50

(Total for Question 1 is 3 marks)

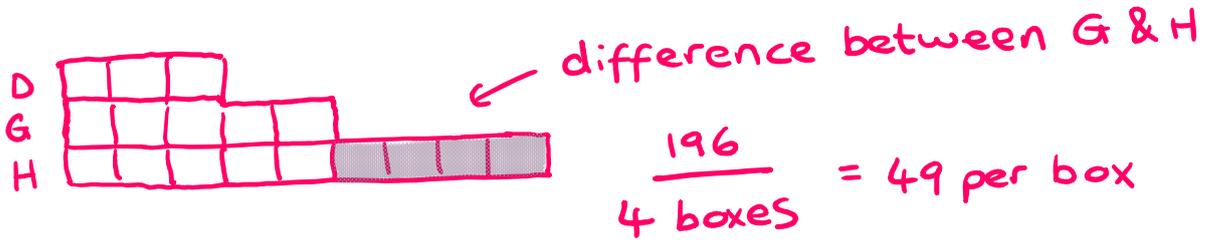


P 5 8 4 4 3 A 0 3 2 4

January 2022 Paper 1H

- 2 Danil, Gabriel and Hadley share some money in the ratios 3 : 5 : 9
The difference between the amount of money that Gabriel receives and the amount of money that Hadley receives is 196 euros.

Work out the amount of money that Danil receives.



$$D = 3 \times 49 = 147 \text{ euro}$$

$$G = 5 \times 49 = 245$$

$$H = 9 \times 49 = 441$$

147 euros

(Total for Question 2 is 3 marks)



2 There are some people in a cinema.

$\frac{3}{5}$ of the people in the cinema are children.

For the children in the cinema,

$$\text{number of girls : number of boys} = 2 : 7$$

There are 170 girls in the cinema.

Work out the number of adults in the cinema.

G  = 170

$$\frac{170}{2} = 85 \text{ per box}$$

B 

$$\begin{aligned} \text{Boys} &= 85 \times 7 \\ &= 595 \end{aligned}$$

$$\begin{aligned} \text{Boys} + \text{Girls} &= 170 + 595 \\ &= 765 \text{ children} \end{aligned}$$

If $\frac{3}{5}$ are children then $\frac{2}{5}$ are adults

$$\text{If } \frac{3}{5} = 765$$

$$\downarrow \div 3$$

$$\frac{1}{5} = 255$$

$$\downarrow \times 2$$

$$\frac{2}{5} = 510 \text{ adults}$$

(Total for Question 2 is 5 marks)



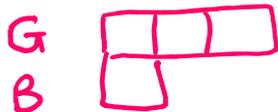
2 There are 60 children in a club.

In the club, the ratio of the number of girls to the number of boys is 3 : 1

$\frac{3}{5}$ of the girls play a musical instrument.

$\frac{4}{5}$ of the boys play a musical instrument.

What fraction of the 60 children play a musical instrument?



$$\frac{60}{4 \text{ boxes}} = 15 \text{ per box}$$

$$\text{Girls} = 3 \times 15 = 45$$

$$\text{Boys} = 15$$

$$\frac{3}{5} \times 45 = 27 \text{ girls}$$

$$\frac{4}{5} \times 15 = 12 \text{ boys}$$

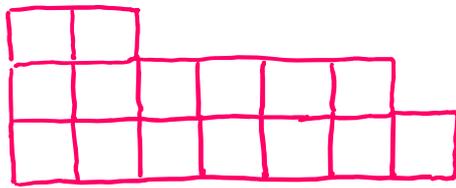
$$27 + 12 = 39 \text{ play instruments}$$

$$\frac{39}{60}$$

(Total for Question 2 is 4 marks)



- 2 Work out the difference between the largest share and the smallest share when 3450 yen is divided in the ratios 2:6:7



$$\frac{3450}{15 \text{ boxes}} = 230 \text{ per box}$$

$$2 \times 230 = 460$$

$$6 \times 230 = 1380$$

$$7 \times 230 = 1610$$

..... yen

(Total for Question 2 is 3 marks)

$$1610 - 460 = 1150$$



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- 3 There are 90 counters in a bag.
Each counter in the bag is either red or blue so that

the number of red counters : the number of blue counters = 2 : 13

Li is going to put some more red counters in the bag so that

the probability of taking at random a red counter from the bag is $\frac{1}{3}$

Work out the number of red counters that Li is going to put in the bag.



$$\frac{90}{15 \text{ boxes}} = 6 \text{ per box}$$

$$\text{Red} = 2 \times 6 = 12$$

$$\text{Blue} = 13 \times 6 = 78$$

$$\text{Red} = \frac{12}{90}$$

more red in

$$\frac{12 + x}{90 + x} = \frac{1}{3}$$

$$3(12 + x) = 90 + x$$

$$36 + 3x = 90 + x$$

$$36 + 2x = 90$$

$$2x = 54$$

$$\div 2 \quad \div 2$$

$$x = 27$$

27 red counters (Total for Question 3 is 4 marks)



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3 Norberto sells white loaves of bread and brown loaves of bread.

He sells a total of 200 loaves such that

$$\text{the number of white loaves sold} : \text{the number of brown loaves sold} = 3 : 2$$

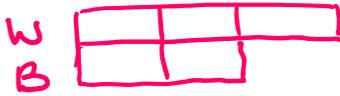
Norberto sells the white loaves for £1.50 each.

He sells the brown loaves for £1.75 each.

40% of the price of a white loaf is profit.

60% of the price of a brown loaf is profit.

Work out Norberto's total profit when he sells all 200 loaves.



$$\frac{200}{5} = 40 \text{ per box}$$

White

Brown

$$3 \times 40 = 120 \text{ loaves}$$

$$2 \times 40 = 80 \text{ loaves}$$

$$120 \times \text{£}1.50 = \text{£}180$$

$$80 \times \text{£}1.75 = \text{£}140$$

$$40\% \times \text{£}180 = \text{£}72$$

$$60\% \times \text{£}140 = \text{£}84$$

$$72 + 84 = \text{£}156 \text{ profit}$$

£.....

(Total for Question 3 is 5 marks)



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4 On a farm there are chickens, ducks and pigs.

The ratio of the number of chickens to the number of ducks is 7:2

The ratio of the number of ducks to the number of pigs is 5:9

There are 36 pigs on the farm.

Work out the number of chickens on the farm.

Duck 

Pig  = 36

$$\frac{36}{9} = 4 \text{ per box}$$

$$\begin{aligned} \text{Ducks} &= 5 \times 4 \\ &= 20 \text{ ducks} \end{aligned}$$

Chick 

Ducks  = 20

$$\frac{20}{2} = 10 \text{ per box}$$

$$\begin{aligned} \text{chickens} &= 7 \times 10 \\ &= 70 \end{aligned}$$

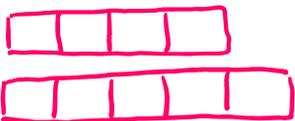
(Total for Question 4 is 3 marks)



4 Anna and Lionel share \$675 in the ratio 4 : 5

Lionel gives $\frac{3}{5}$ of his share of the money to his mother.

How much money does Lionel give to his mother?

A  $\frac{675}{9 \text{ boxes}} = 75 \text{ per box}$

Lionel = $5 \times 75 = 375$

$\frac{3}{5} \times 375 = 225$

\$.....

(Total for Question 4 is 3 marks)

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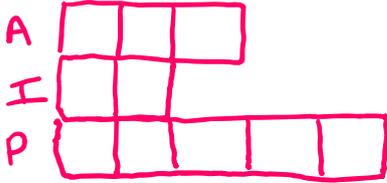
November 2020 P2H

- 4 Andreas, Isla and Paulo share some money in the ratios 3 : 2 : 5

The **total** amount of money that Isla and Paulo receive is £76 more than the amount of money that Andreas receives.

Andreas buys a video game for £48.50 with some of his share of the money.

Work out how much money Andreas has left from his share of the money when he has bought the video game.



$$I + P = 7 \text{ boxes}$$

$$A = 3 \text{ boxes}$$

4 boxes more

$$\frac{£76}{4} = 19 \text{ per box}$$

$$A = 3 \times 19 = £57$$

$$I = 2 \times 19 = £38$$

$$P = 5 \times 19 = £95$$

$$\text{Andreas} \rightarrow 57 - 48.50$$

$$£8.50$$

£.....

(Total for Question 4 is 4 marks)



January 2023 P1H

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5 In a box, there are only green sweets, orange sweets and yellow sweets.

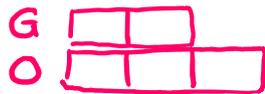
There are 280 sweets in the box so that

the number of green sweets : the number of orange sweets = 2 : 3

and

the number of orange sweets : the number of yellow sweets = 1 : 5

Work out how many green sweets there are in the box.



Yellows is orange x 5

So



$\frac{280}{20 \text{ boxes}} = 14 \text{ per box}$

Green = $2 \times 14 = 28$

(Total for Question 5 is 3 marks)



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5 Avril bakes a cake.

She uses flour, butter and sugar such that

$$\text{weight of flour : weight of butter} = 6 : 5$$

$$\text{weight of butter : weight of sugar} = 3 : 2$$

Avril uses 120 grams of sugar.

Work out the weight of flour Avril uses.

B 

S  = 120 $\frac{120}{2} = 60 \text{ per box}$

$$\begin{aligned} \text{Butter} &= 120 \times 3 \\ &= 360 \text{ g} \end{aligned}$$

F 

B  = 360 $\frac{360}{5} = 72 \text{ per box}$

$$\begin{aligned} \text{Flour} &= 6 \times 72 \\ &= 432 \text{ g} \end{aligned}$$

..... grams

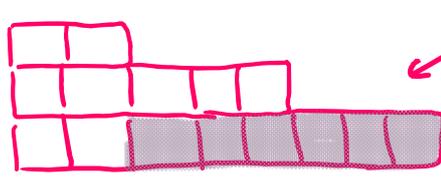
(Total for Question 5 is 3 marks)



January 2023 Paper1HR

- 5 C grams of chocolate is shared in the ratios 2:5:8
The difference between the largest share and the smallest share is 390 grams.

Work out the value of C



$$\frac{390}{6 \text{ boxes}} = 65 \text{ per box}$$

$$2 \times 65 = 130$$

$$5 \times 65 = 325$$

$$8 \times 65 = 520$$

$$\underline{975}$$

$$C = \underline{975}$$

(Total for Question 5 is 3 marks)

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- 5 120 children go on an activity holiday.
The ratio of the number of girls to the number of boys is 3 : 5

On Sunday, all the children either go sailing or go climbing.

$\frac{16}{25}$ of the boys go climbing.

Twice as many girls go sailing as go climbing.

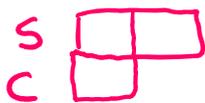
Work out how many children go sailing on Sunday.



$$\frac{120}{8 \text{ boxes}} = 15 \text{ per box}$$

$$\text{Girls} = 3 \times 15 = 45$$

$$\text{Boys} = 5 \times 15 = 75$$



$$\frac{45}{3 \text{ boxes}} = 15 \text{ per box}$$

$$\frac{16}{25} \times 75 = 48 \text{ climb}$$

$$75 - 48 = 27 \text{ sail}$$

$$\text{Sail } 2 \times 15 = 30$$

$$\text{Climb } 1 \times 15 = 15$$

$$\begin{aligned} \text{Sailing} &= 30 + 27 \\ &= 57 \end{aligned}$$

(Total for Question 5 is 6 marks)



- 5 Nancy has some coins with a total value of 85 pence.
 She has only 2 pence coins and 5 pence coins.
 The ratio

number of 2 pence coins : number of 5 pence coins = 1 : 3

Nancy has more 5 pence coins than 2 pence coins.

How many more?

Handwritten calculations showing the process of finding the correct ratio:

$$\begin{array}{l}
 2p : 5p \\
 1 : 3 \\
 1 \times 2p = 2p \quad \swarrow \quad \nwarrow \quad 3 \times 5p = 15p \\
 \quad \quad \quad \searrow \quad \swarrow \\
 \quad \quad \quad 17p
 \end{array}$$

$$\begin{array}{l}
 2 : 6 \\
 2 \times 2p = 4p \quad \swarrow \quad \nwarrow \quad 6 \times 5p = 30p \\
 \quad \quad \quad \searrow \quad \swarrow \\
 \quad \quad \quad 34p
 \end{array}$$

$$\begin{array}{l}
 3 : 9 \\
 3 \times 2p = 6p \quad \swarrow \quad \nwarrow \quad 9 \times 5p = 45p \\
 \quad \quad \quad \searrow \quad \swarrow \\
 \quad \quad \quad 51p
 \end{array}$$

$$\begin{array}{l}
 4 : 12 \\
 4 \times 2p = 8p \quad \swarrow \quad \nwarrow \quad 12 \times 5p = 60p \\
 \quad \quad \quad \searrow \quad \swarrow \\
 \quad \quad \quad 68p
 \end{array}$$

$$\begin{array}{l}
 5 : 15 \\
 5 \times 2p = 10p \quad \swarrow \quad \nwarrow \quad 5 \times 15p = 75p \\
 \quad \quad \quad \searrow \quad \swarrow \\
 \quad \quad \quad 85p \quad \checkmark
 \end{array}$$

There are 5 2ps and 15 5ps

$15 - 5 = 10$ more

(Total for Question 5 is 4 marks)

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June 2021 P2H

- 6 Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12 kg of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

$$\text{weight of nuts : weight of seeds} = 4 : 5$$

The total weight of the nuts and the seeds in each bag will be 19.35 kg

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.

Give your answer correct to one decimal place.

$$\begin{array}{l} N \quad \boxed{} \boxed{} \boxed{} \boxed{} \\ S \quad \boxed{} \boxed{} \boxed{} \boxed{} \boxed{} \end{array} \quad \frac{19.35}{9 \text{ boxes}} = 2.15 \text{ per box}$$

$$\begin{aligned} \text{Nuts} &= 4 \times 2.15 \\ &= 8.6 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{seeds} &= 5 \times 2.15 \\ &= 10.75 \end{aligned}$$

$$12 - 10.75 = 1.25 \text{ kg less}$$

$$\begin{aligned} \frac{\text{Change}}{\text{original}} \times 100 &= \frac{1.25}{12} \times 100 \\ &= 10.4 \% \end{aligned}$$

..... %

(Total for Question 6 is 4 marks)

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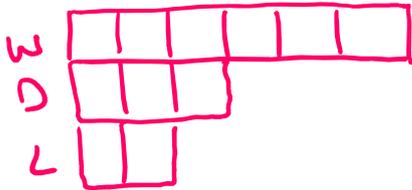
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- 7 A football team played 55 games.
Each game was won, drawn or lost.

number of games won : number of games drawn : number of games lost = 6 : 3 : 2

Work out how many more games the team won than the team lost.



$$\frac{55}{11 \text{ boxes}} = 5 \text{ per box}$$

$$\text{Win} = 6 \times 5 = 30 \text{ games}$$

$$\text{Draw} = 3 \times 5 = 15$$

$$\text{lost} = 2 \times 5 = 10$$

(Total for Question 7 is 3 marks)

$$30 - 10 = 20 \text{ more games}$$



- 8 Ishir plants 600 bulbs in a garden.
He plants tulip bulbs, crocus bulbs and daffodil bulbs so that

$$\text{number of tulip bulbs} : \text{number of crocus bulbs} : \text{number of daffodil bulbs} = 9 : 4 : 2$$

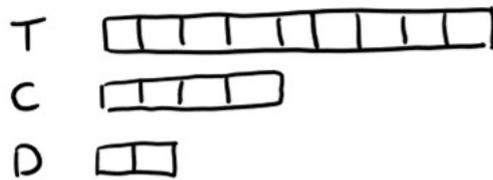
45% of the tulip bulbs are for yellow flowers.

$\frac{5}{8}$ of the crocus bulbs are for yellow flowers.

All of the daffodil bulbs are for yellow flowers.

Work out the number of bulbs that are for yellow flowers.

600 Bulbs



$$600 \div 15 \text{ boxes}$$

$$40 \text{ per box}$$

Tulips $9 \times 40 = 360$

Crocus $4 \times 40 = 160$

Daffodil $2 \times 40 = 80$

Tulip $45\% \times 360 = 162 \text{ yellow}$

Crocus $\frac{5}{8} \times 160 = 100 \text{ yellow}$

Daffodil 80 yellow

Total $162 + 100 + 80$ 342

(Total for Question 8 is 5 marks)



June 2022 P2H

8 Behnaz makes 300 celebration cards so that

number of birthday cards : number of anniversary cards : number of congratulations cards = 7:5:3

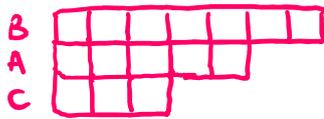
$\frac{2}{5}$ of the birthday cards have numbers on them.

36% of the anniversary cards have numbers on them.

None of the congratulations cards have numbers on them.

Work out what fraction of the 300 cards have numbers on them.

Give your answer in its simplest form.



$$\frac{300}{15 \text{ boxes}} = 20 \text{ per box}$$

Birthday

Anniversary

Congratulations

$$7 \times 20 = 140$$

$$5 \times 20 = 100$$

$$3 \times 20 = 60$$

$$\frac{2}{5} \times 140 = 56$$

$$36\% \times 100 = 36$$

$$0$$

$$56 + 36 + 0 = 92$$

$$\frac{92}{300} = \frac{23}{75}$$

(Total for Question 8 is 5 marks)



January 2021 P2H

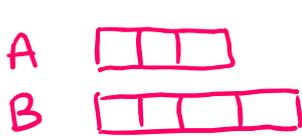
10 The people working for a company work in Team A or in Team B.

number of people in Team A : number of people in Team B = 3 : 4

$\frac{4}{5}$ of Team A work full time.

24% of Team B work full time.

Work out what fraction of the people working for the company work full time.
Give your fraction in its simplest form.



$$\text{Team A} = \frac{3}{7}$$

$$\text{Team B} = \frac{4}{7}$$

Team A

$$\begin{aligned} \frac{4}{5} \text{ of } \frac{3}{7} &= \frac{4}{5} \times \frac{3}{7} \\ &= \frac{12}{35} \text{ full time} \end{aligned}$$

Team B

$$\begin{aligned} 24\% \text{ of } \frac{4}{7} &= 24\% \times \frac{4}{7} \\ &= \frac{24}{175} \text{ full time} \end{aligned}$$

$$\frac{12}{35} + \frac{24}{175} = \frac{12}{25}$$

(Total for Question 10 is 3 marks)



November 2020 Paper 1HR

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10 Alex makes 80 cakes to sell.
He makes chocolate cakes, lemon cakes and fruit cakes where

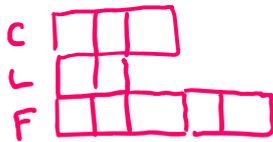
$$\text{number of chocolate cakes} : \text{number of lemon cakes} : \text{number of fruit cakes} = 3 : 2 : 5$$

Alex sells
all of the chocolate cakes
 $\frac{3}{4}$ of the lemon cakes
 $\frac{7}{8}$ of the fruit cakes

The profit he makes on each cake he sells is shown in the table.

| Type of cake | Profit per cake he sells |
|--------------|--------------------------|
| chocolate | £2.00 |
| lemon | £1.70 |
| fruit | £2.40 |

Work out the total profit that Alex makes from the cakes he sells.



$$\frac{80}{10 \text{ boxes}} = 8 \text{ per box}$$

Chocolate

Lemon

Fruit

$$8 \times 3 = 24 \text{ cakes}$$

$$8 \times 2 = 16 \text{ cakes}$$

$$8 \times 5 = 40 \text{ cakes}$$

$$\text{All} = 24 \text{ sold}$$

$$\frac{3}{4} \times 16 = 12 \text{ sold}$$

$$\frac{7}{8} \times 40 = 35 \text{ sold}$$

$$24 \times £2 = £48$$

$$12 \times £1.70 = £20.40$$

$$35 \times £2.40 = £84$$

$$\text{Total } 48 + 20.40 + 84$$

$$£ \underline{152.40}$$

(Total for Question 10 is 5 marks)



- 11 3 years ago, the ratio of Tom's age to Clemmie's age was 2 : 7
Tom is now 15 years old and Clemmie is now x years old.

Find the value of x .

Tom = 15 years

3 years ago Tom = 12

T  $\frac{12}{2 \text{ box}} = 6 \text{ per box}$

C 

Clemmie = 7×6
= 42 years old

Now Clemmie = $42 + 3$

= 45 years old

$x = \dots\dots\dots$

(Total for Question 11 is 3 marks)

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14 The combined savings of Abel and Bahira are 15 435 dinars.

The savings of Bahira are 45% more than the savings of Abel.

The savings of Bahira are $\frac{3}{2}$ times the savings of Chanda.

Work out the savings of Chanda.

$$\begin{array}{l}
 A : B \qquad A \quad D \times 100 \\
 100 : 145 \qquad B \quad D \times 145 \qquad \frac{15435}{245 \text{ boxes}} = 63 \text{ per box}
 \end{array}$$

$$Abel = 100 \times 63 = 6300$$

$$Bahira = 145 \times 63 = 9135$$

$$B : C$$

$$3 : 2$$

$$B \quad \begin{array}{|c|c|c|} \hline \hline \hline \end{array} = 9135$$

$$\frac{9135}{3} = 3045 \text{ per box}$$

$$C \quad \begin{array}{|c|c|} \hline \hline \hline \end{array}$$

$$\begin{aligned}
 C &= 2 \times 3045 \\
 &= 6090
 \end{aligned}$$

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..... dinars

(Total for Question 14 is 5 marks)



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20 Mathematically similar wooden blocks are made in a workshop.

There are small blocks and there are large blocks.

The volume of each small block is 300 cm^3

Given that

the surface area of each small block : the surface area of each large block = $25 : 36$

work out the volume of each large block.

Small SA : Large SA

$$25 : 36 \quad \sqrt{\frac{36}{25}} = \frac{6}{5} \quad \text{length scale factor}$$

$$\text{Volume} \left(\frac{6}{5}\right)^3 = \frac{216}{125}$$

Small : large

$$1 : \frac{216}{125}$$

$$\text{Volume} = 300 \times \frac{216}{125}$$

$$= 518.4$$

..... cm^3

(Total for Question 20 is 3 marks)

