

Write your name here

Surname

Other Names

# Mathematics

## Practice Set A Paper 3 (Calculator) Foundation Tier

Time: 1 hour 30 minutes

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– there may be more space than you need.
- **Calculators may be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**



### Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets  
– use this as a guide as to how much time to spend on each question.

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

1 Write 29% as a fraction.

$$\frac{29}{100}$$

(Total for Question 1 is 1 mark)

2 Write 0.6 as a percentage.

$$60\%$$

(Total for Question 2 is 1 mark)

3 Write 2479 to the nearest thousand.

$$2000$$

(Total for Question 3 is 1 mark)

4 Write the following numbers in order of size.  
Start with the smallest number.

5.400      5.490      5.940      5.904      5.040

5.04      5.4      5.49      5.904      5.94

(Total for Question 4 is 1 mark)

5 Write the following numbers in order of size.  
Start with the smallest number.

5      -7      -3      -1      4

-7      -3      -1      4      5

(Total for Question 5 is 1 mark)

- 6 Barry is thinking of a number.  
He says,

"My number is odd. It is a factor of 60 and a multiple of 5"

There are two possible numbers Barry can be thinking of.

Write down these two numbers.

FACTORS OF 60: ~~1~~, 60  
2, 30  
~~3~~, 20  
4, 15  
5, 12  
6, 10

5                      15

(Total for Question 6 is 3 marks)

- 7 Here are the first four terms of a sequence.

8                      11                      14                      17

- (a) Write down the next term in the sequence.

20

(1)

- (b) Explain how you got your answer

I added 3 to 17.

(1)

(Total for Question 7 is 2 marks)

- 8 (a) Find the value of  $20.5^2 + 14.2^2$

621.89

(1)

- (b) Find the value of  $\sqrt{34.4 + 7.85} - 0.97$

5.53

(2)

(Total for Question 8 is 3 marks)

9 Here is part of a train timetable.

London Marylebone	1410	1440	1510	1540
High Wycombe	1433	-	1534	-
Banbury	1506	1541	1608	1639
Leamington Spa	1524	1559	1626	1657
Warwick Parkway	1530	1606	1631	1705
Solihull	1544	1622	1644	1721
Birmingham Moor Street	1556	1632	1653	1735

(a) A train leaves London Marylebone at 1510, what time does it arrive in Birmingham Moor Street?

..... 1653

(1)

(b) How many minutes should the 1410 train take to get from London Marylebone to Birmingham Moor Street?

1410     $\curvearrowright$     1510     $\curvearrowright$     1556  
           60            46

..... 106 minutes

(1)

Millie goes from Banbury to Birmingham Moor Street on the train.

Millie takes 14 minutes to get from her house to the train station in Banbury.  
 She takes 25 minutes to get from Birmingham Moor Street station to her meeting.

Millie needs to get to the meeting by 5 pm.  
 Millie leaves her home at 3.15 pm.

(c) Does Millie get to her meeting by 5pm?  
 You must show all your working.

$$3.15\text{pm} + 14 \text{ mins} = 3.29\text{pm}$$

1541 TRAIN

1632 BIRMINGHAM

$$1632 + 25 \text{ mins} = \underline{1657}$$

Yes

(3)

(Total for Question 9 is 5 marks)

- 10 Liam goes to a Cafe.  
He buys  
3 coffees for £1.74 each  
2 teas for £1.48 each  
5 cakes for £2.29 each

Work out the total amount that Liam spends.

$$3 \times 1.74 + 2 \times 1.48 + 5 \times 2.29$$

£ 19.63

(Total for Question 10 is 2 marks)

- 11 Last year the cost of Tom's train ticket was £46  
This year the cost of Tom's train ticket increased to £54

Write down the increase in the cost of Tom's ticket as a fraction of last year's cost.

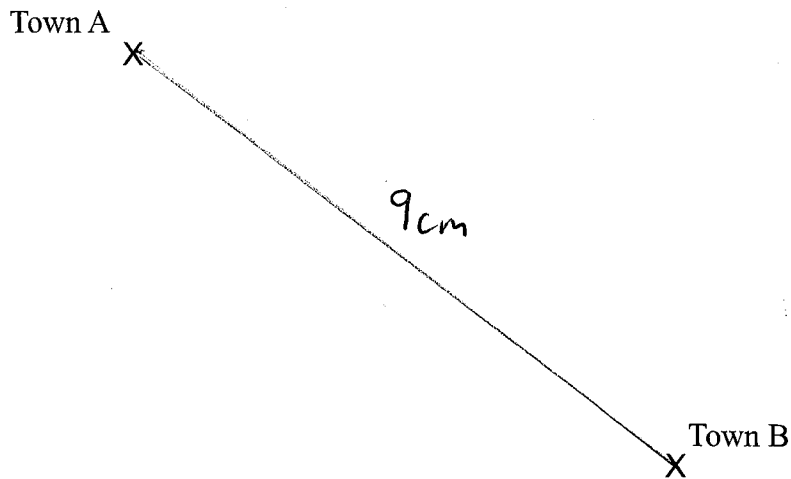
$$54 - 46 = \pounds 8 \text{ increase}$$

$$\frac{8}{46} \quad \text{OR} \quad \frac{4}{23}$$

$$\frac{8}{46}$$

(Total for Question 11 is 2 marks)

- 12 The accurate scale drawing shows two towns, Town A and Town B.



The scale is 1:50000

Find the real distance between Town A and Town B, in kilometres.

$$\begin{aligned} 9 \times 50000 &= 450000 \text{ cm} \\ &= 4500 \text{ m} \\ &= 4.5 \text{ km} \end{aligned}$$

..... 4.5 ..... km

(Total for Question 12 is 4 marks)

- 13 Write brackets ( ) in this statement to make each statement correct.  
You may use more than one pair of brackets in each statement.

(a)  $4 \times (5 + 3) = 32$  (1)

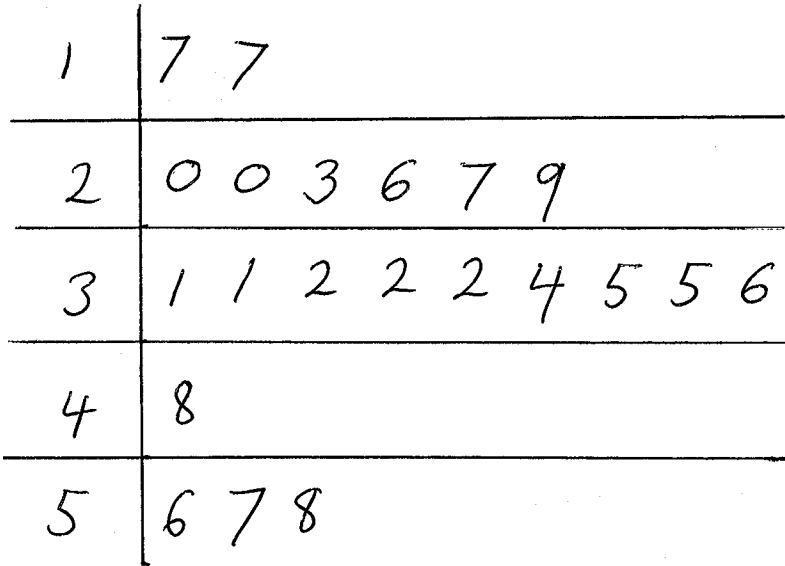
(b)  $3 + 4 \times (5 + 6) = 47$  (1)

(Total for Question 13 is 2 marks)

14 Here are the ages of a company's employees.

~~31~~ ~~57~~ ~~48~~ ~~56~~ ~~31~~ ~~17~~ ~~34~~  
~~20~~ ~~32~~ ~~35~~ ~~32~~ ~~36~~ ~~20~~ ~~23~~  
~~32~~ ~~17~~ ~~35~~ ~~26~~ ~~27~~ ~~29~~ ~~58~~

(a) Draw an ordered stem and leaf diagram to show this information.  
 You must include a key. (3)



<u>key</u>
1   7 = 17 years old

One of the employees is selected at random

(b) Find the probability that they are younger than 30.

$$\frac{8}{21}$$

(2)

(Total for Question 14 is 5 marks)

15 Holly is thinking of a number.

$\frac{3}{4}$  of Holly's number is 39.

Work out the number Holly is thinking of.

$$\frac{3}{4}x = 39$$

$$\frac{1}{4}x = 13$$

$$x = 52$$

..... 52

(Total for Question 15 is 2 marks)

16 (a) Write the ratio 18 : 45 in its simplest form.

$$\div 9 \quad \div 9$$

$$2 : 5$$

..... 2 : 5

(1)

(b) There are red shapes and blue shapes in a box,  $\frac{2}{5}$  of the shapes are red.

Write the ratio of red shapes to blue shapes.

$$\frac{2}{5} : \frac{3}{5}$$

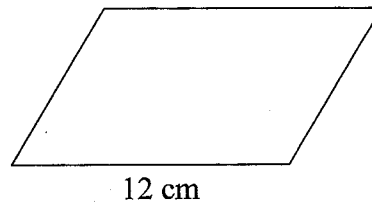
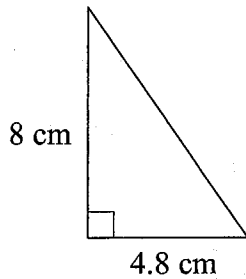
..... 2 : 3

(1)

(Total for Question 16 is 2 marks)



- 17 The diagram shows a right angled triangle and a parallelogram.



The area of the parallelogram is four times the area of the triangle.

The perpendicular height of the parallelogram is  $h$ .

Find the value of  $h$ .

$$\begin{aligned} \text{Area of parallelogram} &= 4 \times \frac{1}{2} (4.8)(8) \\ &= 76.8 \text{ cm}^2 \end{aligned}$$

$$12 \times h = 76.8$$

$$h = 6.4 \text{ cm}$$

$$h = \underline{\underline{6.4 \text{ cm}}}$$

(Total for Question 17 is 3 marks)

- 18 (a) Write  $7.329 \times 10^6$  as an ordinary number.

7 329 000

(1)

- (b) Write 0.0508 in standard form.

$5.08 \times 10^{-2}$

(1)

- (c) Calculate  $(5.51 \times 10^4) \div (5.8 \times 10^{-3})$   
Give your answer in standard form.

9 500 000

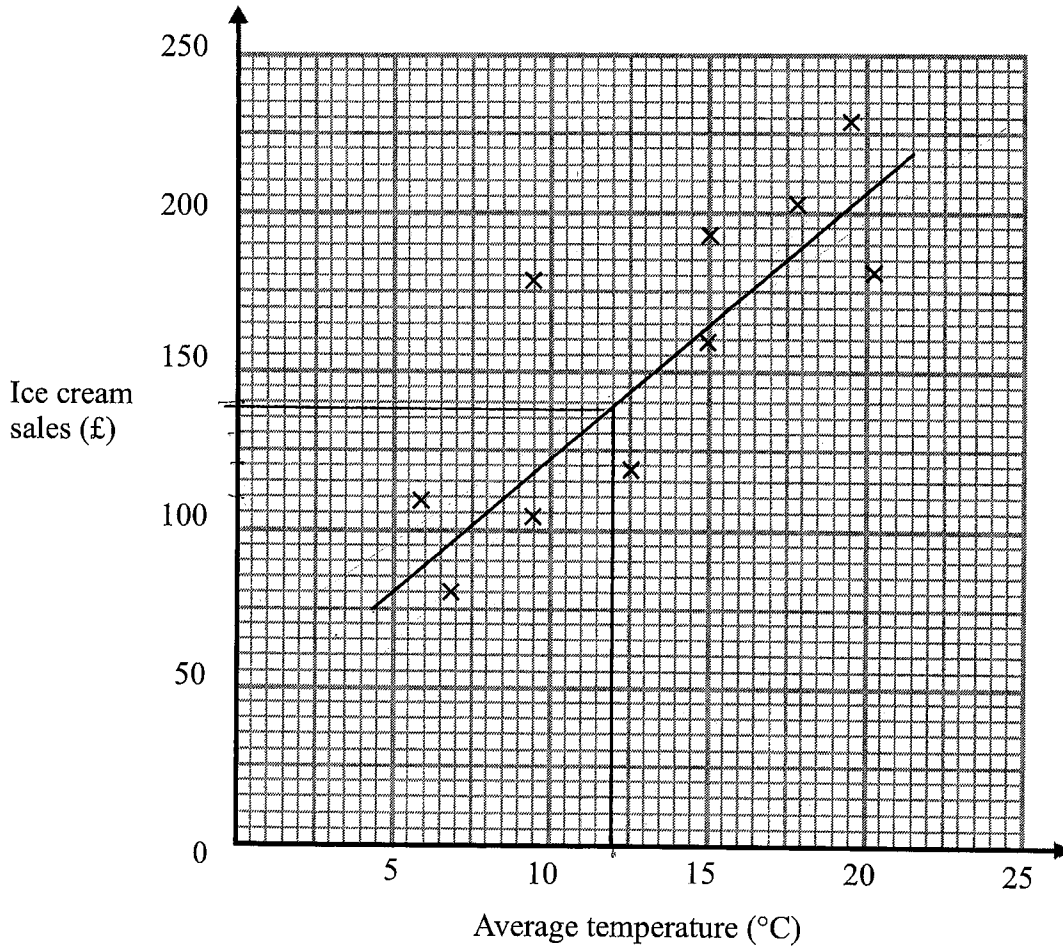
$9.5 \times 10^6$

(2)

(Total for Question 18 is 4 marks)

- 19 The average daytime temperature for 10 days is recorded.  
A shop also records its ice cream sales for each of the 10 days.

The scatter graph shows this information.



- (a) What type of correlation does the scatter graph show?

positive (1)

- (b) On the 11<sup>th</sup> day the temperature was 12°.  
Estimate the ice cream sales on the 11th day.

£140  
£130 - £150 (2)

- (c) The shop's manager wants to use the scatter graph to predict the ice cream sales for a day with an average temperature of 2°. Comment on the reliability of this prediction.

It is unreliable, 2°C is outside of the  
range of data.

(1)

(Total for Question 19 is 4 marks)

20 Solve

$$8t - 19 = 5t - 11$$

$$-5t \quad -5t$$

$$3t - 19 = -11$$

$$+19 \quad +19$$

$$3t = 8$$

$$t = \frac{8}{3}$$

$$t = \frac{8}{3}$$

(Total for Question 20 is 2 marks)

21 Bob is going to make some orange paint.

He needs to mix red paint, yellow paint and white paint in the ratio 7 : 6 : 2

Bob wants to make 750 ml of orange paint.

Bob has

400 ml of red paint

300 ml of yellow paint

200 ml of white paint

Does Bob have enough red paint, yellow paint and white paint to make the orange paint?

You must show all your working.

$$7 + 6 + 2 = 15$$

$$\frac{750}{15} = 50 \text{ ml}$$

$$\text{Red : } 7 \times 50 = 350 \text{ ml } \checkmark$$

$$\text{Yellow : } 6 \times 50 = 300 \text{ ml } \checkmark$$

$$\text{white : } 2 \times 50 = 100 \text{ ml } \checkmark$$

Bob has  
enough paint.

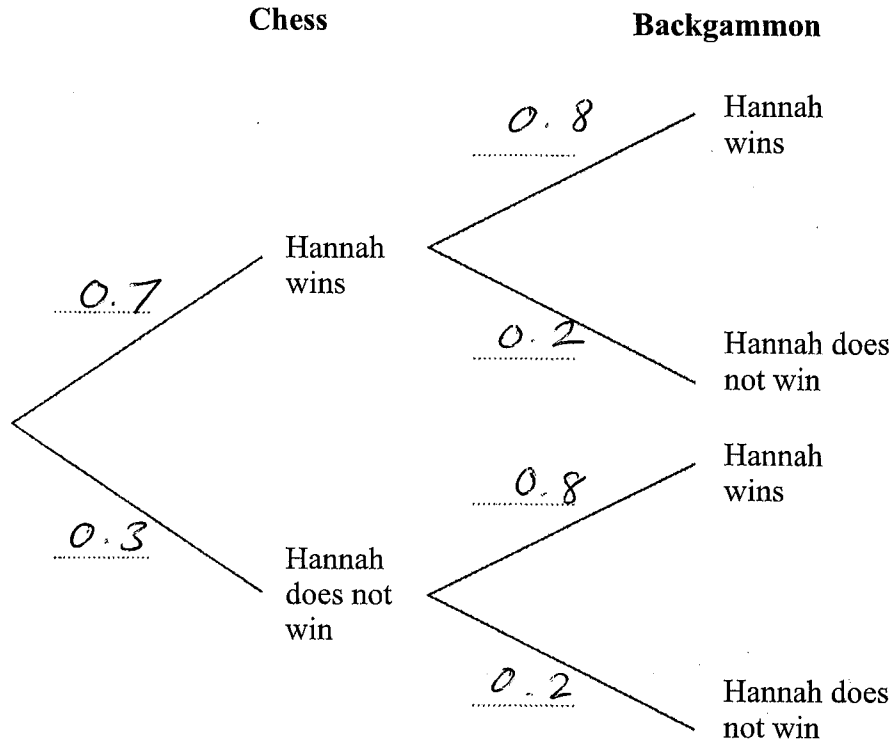
(Total for Question 21 is 4 marks)

22 Hannah is going to play one game of chess and one game of backgammon.

The probability she will win the game of chess is 0.7

The probability she will win the game of backgammon is 0.8

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that Hannah will win both games.

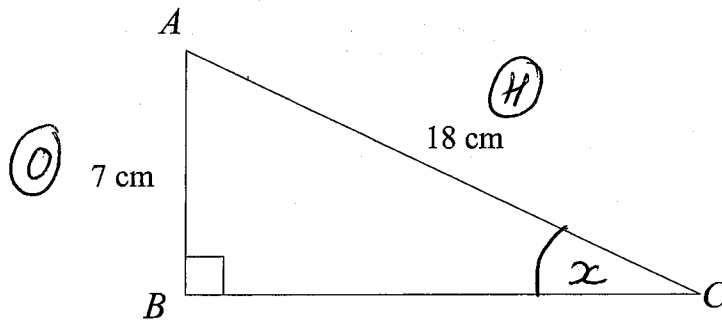
$$0.7 \times 0.8 = 0.56$$

0.56

(2)

(Total for Question 22 is 4 marks)

23



Calculate the size of angle  $ACB$ .

$$\sin x = \frac{7}{18}$$

$$\sin x = \frac{7}{18}$$

$$x = \sin^{-1}\left(\frac{7}{18}\right)$$

$$= \underline{\underline{22.9^\circ}} \quad (1 \text{ dp})$$

$$\dots \underline{\underline{22.9^\circ}}$$

(Total for Question 23 is 2 marks)

24 (a) Factorise fully  $18a^2b + 12ab^2$

$$\underline{\underline{6ab(3a + 2b)}}$$

(2)

(b) Expand and Simplify  $5(2y - 5) - 3(2y - 1)$

$$10y - 25 - 6y + 3$$

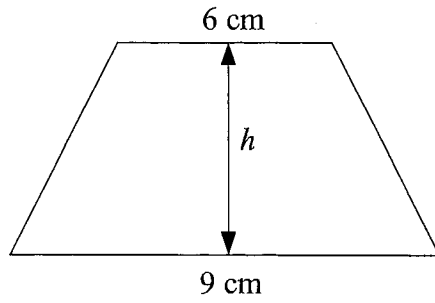
$$4y - 22$$

$$\underline{\underline{4y - 22}}$$

(2)

(Total for Question 24 is 4 marks)

- 25 The diagram shows a trapezium with an area of  $45 \text{ cm}^2$  and a perpendicular height  $h$  cm.



Find the value of  $h$ .

$$\frac{1}{2}(6+9)h = 45$$

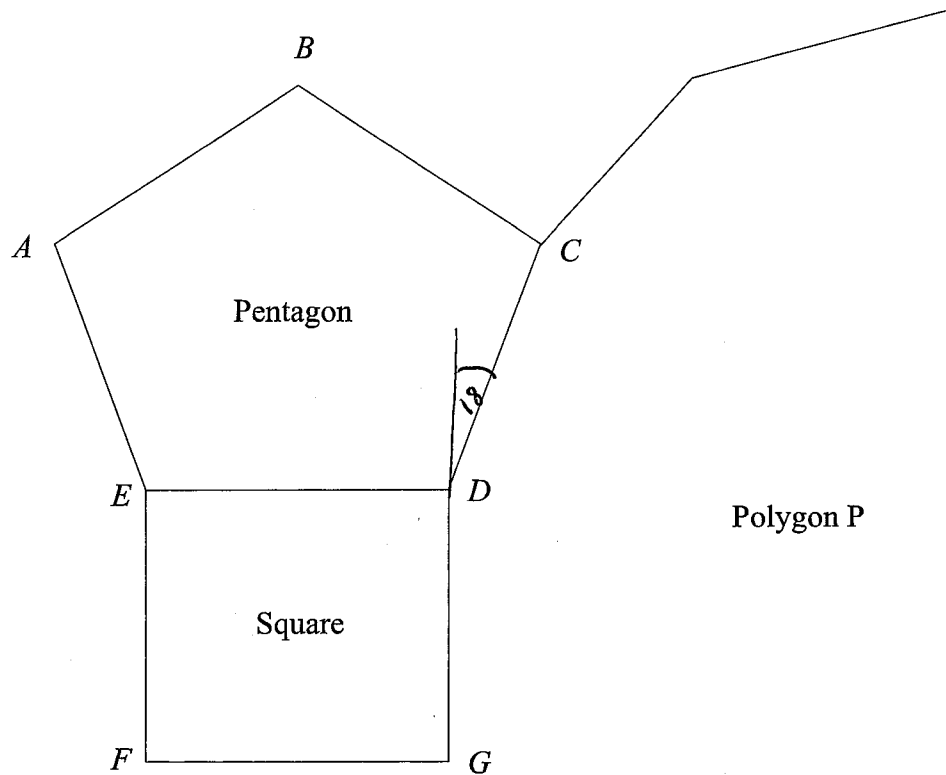
$$7.5h = 45$$

$$h = \frac{45}{7.5}$$

$$= 6$$

$$h = \underline{6 \text{ cm}}$$

(Total for Question 25 is 2 marks)



The diagram shows a regular pentagon, ABCDE, and a square, EDFG.

The lines CD and DG are both sides of another regular polygon, P.

How many sides does polygon P have?

You must show how you got your answer.

$$\text{Exterior angle of pentagon} = \frac{360}{5} = 72^\circ$$

$$\begin{aligned} \text{Interior angle of pentagon} &= 180 - 72 \\ &= 108^\circ \end{aligned}$$

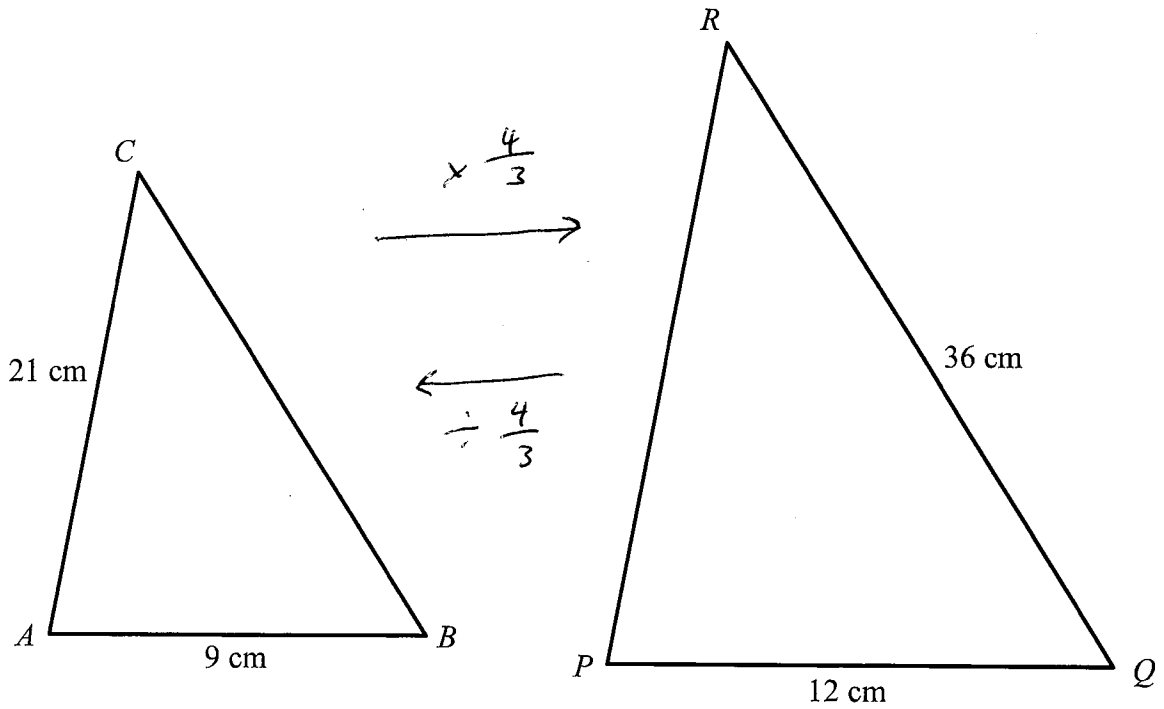
$$108 - 90 = \underline{\underline{18^\circ}}$$

$$\text{Exterior angle of } P = 18^\circ$$

$$\frac{360}{18} = \underline{\underline{20 \text{ sides}}}$$

..... 20 .....

(Total for Question 26 is 4 marks)



The two triangles  $ABC$  and  $PQR$  are mathematically similar.

Angle  $A$  = angle  $P$

Angle  $B$  = angle  $Q$

$AB = 9$  cm

$AC = 21$  cm

$PQ = 12$  cm

$QR = 28$  cm

Scale factor  $\times \frac{12}{9} \left[ \frac{4}{3} \right]$

- (a) Calculate the length of  $PR$ .

$$21 \times \frac{4}{3}$$

..... 28 cm  
(2)

- (b) Calculate the length of  $BC$ .

$$36 \div \frac{4}{3}$$

..... 27 cm  
(2)

(Total for Question 27 is 4 marks)



28 Make  $x$  the subject of  $y = \frac{5x-4}{3}$

$$3y = 5x - 4$$

$$3y + 4 = 5x$$

$$x = \frac{3y + 4}{5}$$

$$x = \frac{3y + 4}{5}$$

(Total for Question 28 is 3 marks)

29 Solve the simultaneous equations

$$4x + 2y = 11 \quad \times 5$$

$$5x + 3y = 13 \quad \times 4$$

$$20x + 10y = 55$$

$$20x + 12y = 52$$

$$-2y = 3$$

$$y = -\frac{3}{2} = \underline{\underline{-1.5}}$$

$$4x + 2(-1.5) = 11$$

$$4x - 3 = 11$$

$$4x = 14$$

$$x = \frac{14}{4} = \underline{\underline{3.5}}$$

$$x = \underline{\underline{3.5}}$$

$$y = \underline{\underline{-1.5}}$$

(Total for Question 29 is 3 marks)