Write your name here

Surname	Other Names

Mathematics

2019 Practice Paper
Paper 2 (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, calculator. Tracing paper may be used.

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.**

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 Change 3 litres into millilitres

3000 millilitres

(Total for question 1 is 1 mark)

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2 Here is a list of numbers.

6 8 10 16 19 26 30

(a) From the numbers in the list, write down a prime number.

19

(1)

(b) From the numbers in the list, write down a square number.

16

(1)

(Total for question 2 is 2 marks)

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3 Write down all the factors of 20.

1 x 20
2 x 10
4 x 5

1, 20, 2, 10, 4, 5

(Total for question 3 is 2 marks)

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4 (a) Write down the probability of scoring an odd number on an ordinary six sided dice

$\frac{1}{2}$

(1)

(b) Write down the probability of scoring a 6 on an ordinary six sided dice

$\frac{1}{6}$

(1)

(Total for question 4 is 2 marks)

5 There are three different options for starter and three options for main course.

Starter	Main Course
Bread B	Lasagne L
Salad S	Pizza P
Olives O	Ravioli R

(a) List all the different combinations that can be chosen

BL SL OL

BP SP OP

BR SR OR

(Total for question 5 is 2 marks)

6 (a) Simplify $3f \times 4g$

$12fg$

(1)

(b) Simplify $3x - 6y + 5x + y$

$8x - 5y$

(2)

(Total for question 6 is 3 marks)

7 (a) Write the ratio 32:24 in its simplest form

16 : 12

8 : 6

4 : 3

4 : 3

(1)

(b) $\frac{1}{9}$ of people in a class are left handed.

Write the ratio of left handed people to right handed people

$\frac{1}{9} : \frac{8}{9}$

1 : 8

1 : 8

(1)

(Total for question 7 is 2 marks)

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8 Here are the first 5 terms of a sequence.

17 14 11 8 5 2

−3 −3 −3 −3

(a) Find the next term of this sequence.

2

(1)

The nth term of a different sequence is $10n^2 + 5$

(b) Work out the 5th term of this sequence.

$10(5)^2 + 5$

255

(1)

(Total for question 8 is 2 marks)

9 Amelia wants to buy 6 sausage rolls.

Each sausage roll costs 84p

Amelia pays with a £10 note.

(a) Work out how much change Amelia will get from £10.

$6 \times 0.84 = £5.04$

$10 - 5.04$

£ 4.96

(2)

(b) When in the shop Amelia finds out that the price of the sausage rolls has been increased.

How does this affect the amount of change she will get?

She will get less change.

(1)

(Total for question 6 is 3 marks)

9

10 Ian is going to make some cakes.

He was worked out her needs 16 eggs, 675g of sugar and 390g of flour.

6 12 18

Ian can buy: packs of 6 eggs for £1.45 each 3 PACKS
500g bags of sugar for 59p each 2 BAGS
500g bags of flour for 95p each 1 BAG.

Work out how much does Ian need to spend to buy his ingredients

$3 \times 1.45 = 4.35$

$2 \times 0.59 = 1.18$

$1 \times 0.95 = 0.95$

$4.35 + 1.18 + 0.95$

£ 6.48

(Total for question 10 is 3 marks)

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11 Abbie buys a sofa for £540
She pays a deposit of 15% and the rest of the money in monthly payments of £17.

How many monthly payments will Abbie need to pay?

$15\% \times 540 = 81$

$540 - 81 = 459$

$459 \div 17 = 27$

27

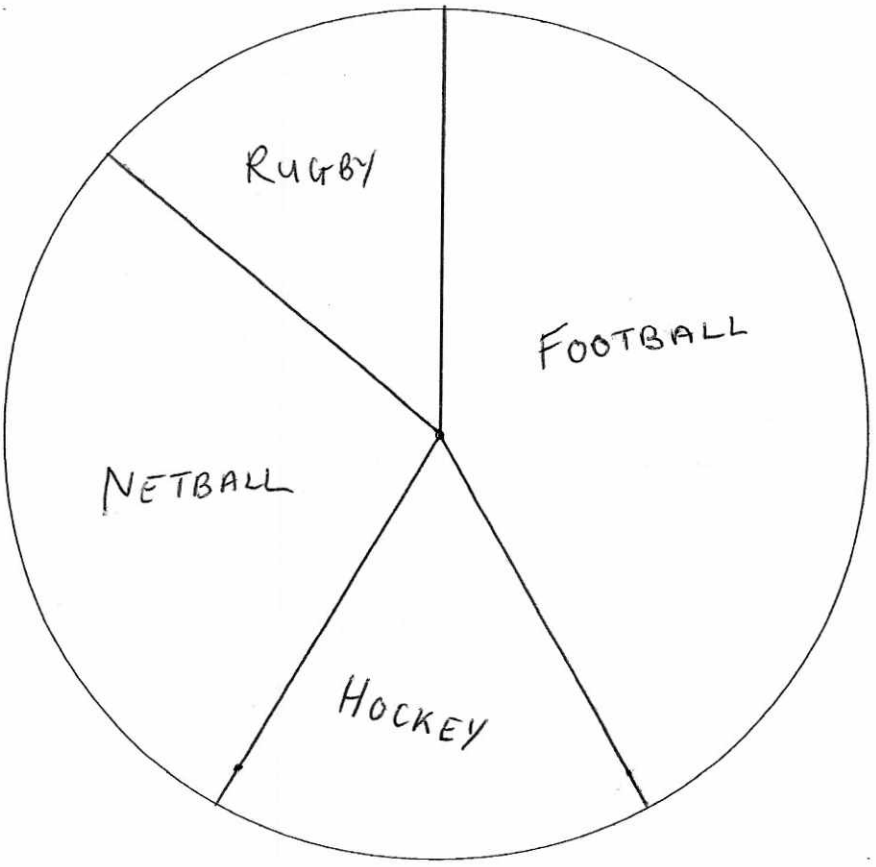
(Total for question 11 is 3 marks)

12 The table shows some information about the favourite sport of some students.

Colour	Frequency	Angle
Football	30	150°
Hockey	12	60
Netball	20	100
Rugby	10	50

72

Draw an accurate pie chart to show this information.



(4)

(Total for question 12 is 4 marks)

13 The diagram below represents two towns on a map.

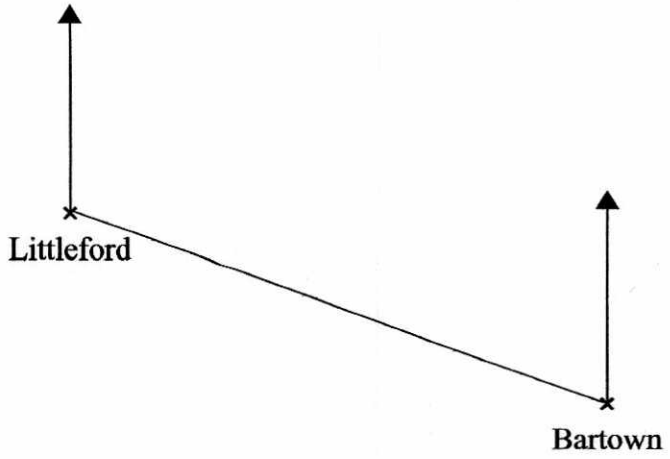


Diagram accurately drawn

Scale: 1cm represents 5 kilometres

(a) Work out the real distance between Littleford and Bartown.

7.5 x 5

37.5 km

(2)

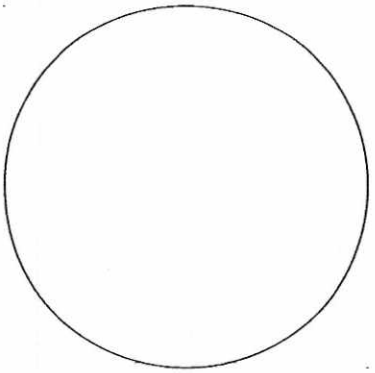
(b) Find the bearing of Bartown from Littleford

109 °

(1)

(Total for question 13 is 3 marks)

14



A circular field has a diameter of 32 metres. A farmer wants to buy enough grass seed to cover the field.

One box of grass seed will cover $66m^2$

Work out how many boxes of grass seed the farmer need to buy.

radius = 16 m

Area $= \pi r^2$

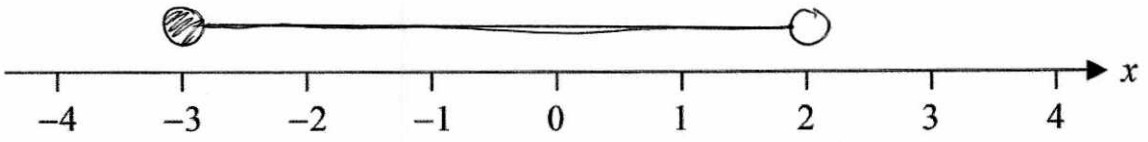
$= \pi (16)^2$

$= 804.247\ldots\ m^2$

$804.247 \div 66 = 12.18\ldots$ ..... 13 .....boxes

(Total for question 14 is 3 marks)

15 Here is a number line.



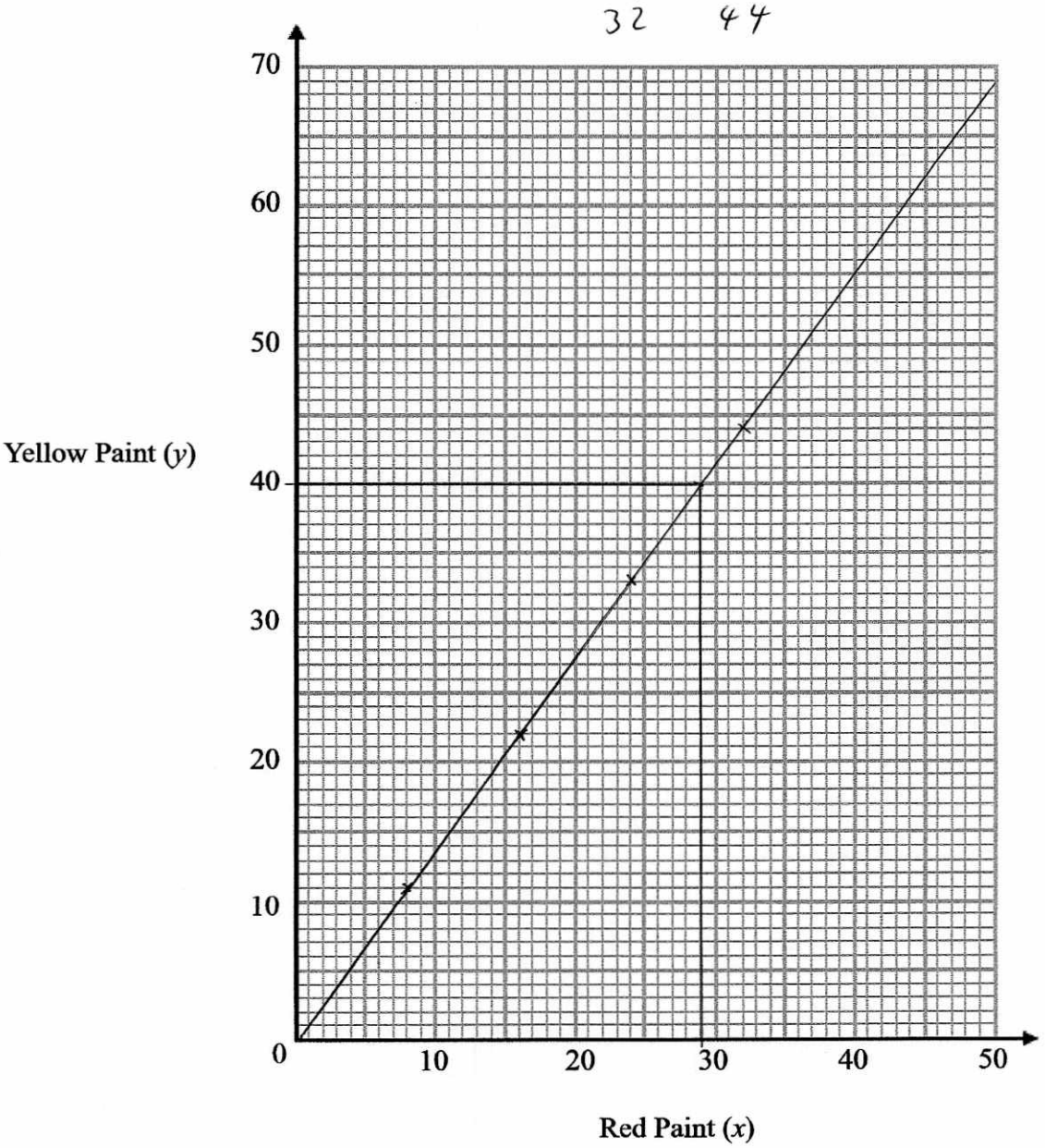
On this number line show the inequality $-3 \leqslant x < 2$

(Total for question 15 is 2 marks)

16 An artist is making orange paint by mixing red paint (x ml) and yellow paint (y ml) in the ratio 8:11

(a) Use this information to draw a graph showing the relationship between the amount of red paint and the amount of yellow paint used.

R	Y
8	11
16	22
24	33
32	44



(2)

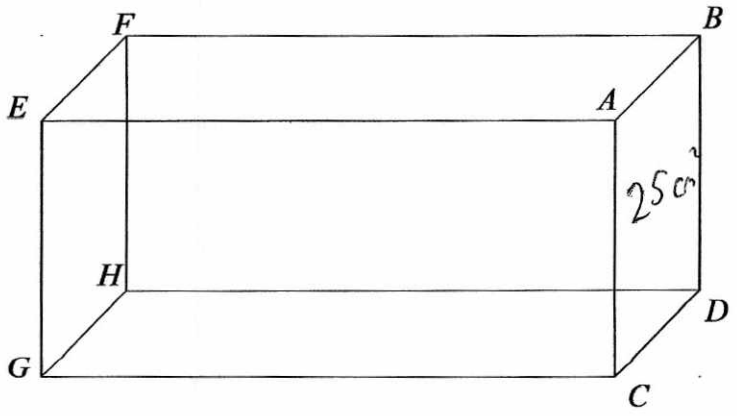
(b) The artist decides to use 40ml of yellow paint. Use your graph to work out how much red paint he should use.

29 ml

(1)

(Total for question 16 is 3 marks)

17



The diagram shows a cuboid *ABCDEFGH*

ABCD is a square with area $25cm^2$.
CG = 12 cm.

Find the volume of the cuboid.

25 x 12

300 cm^3

(Total for question 17 is 2 marks)

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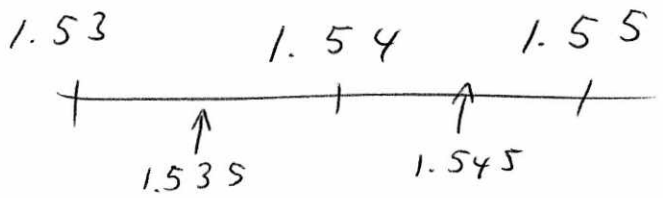
18 A number x is rounded to 2 decimal places.

The result is 1.54

Write down the error interval for x.



$1.535 \leqslant x < 1.545$

(Total for question 18 is 2 marks)

19 Andy and Bruce share some sweets in the ratio 9:4. = 13 PARTS

Andy gets A sweets
Bruce gets B sweets

Carla and David share the same amount of sweets as Andy and Bruce.
They share their sweets in the ratio 5:2. = 7 PARTS

Carla gets C sweets
David gets D sweets

Find $A:B:C:D$

A : B
9 : 4
x 7
63 : 28

C : D
5 : 2
x 13
65 : 26

A : B : C : D
63 : 28 : 65 : 26

63 : 28 : 65 : 26

(Total for question 19 is 3 marks)

20 (a) Write 9870000 in standard form.

9.87×10^{6}

(1)

(b) Work out the value of $(9.2 \times 10^{6}) \div (3.4 \times 10^{8})$
Give your answer in standard form to 3 significant figures.

$= 0.02711 (3sf)$

2.71×10^{-2}

(2)

(Total for question 20 is 3 marks)

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21 Charlie invests £5600 for 4 years in a savings account.
She gets 2% per annum compound interest.

How much money does Charlie have at the end of 4 years.

5600×1.02^{4}

£6061.62

£6061.62

(Total for question 21 is 2 marks)

22 In London potatoes cost £0.45 per lb.
In Dublin potatoes cost €1.48 per kilogram.

1 kg = 2.2 lbs
£1 = €1.15

In which city are potatoes better value for money, London or Dublin?
You must show your working.

DUBLIN

$\frac{1.48}{2.2} = 0.67\dot{2}$ € per lb

$\frac{0.67\dot{2}}{1.15}$ = £0.58 per lb

LONDON

£0.45 per lb

They are better value for money in London.

(Total for question 22 is 3 marks)

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23 (a) Given $\frac{x^6}{x^a} = x^8$

Find the value of a.

$a =$ -2

(1)

(b) Simplify $(2m^2)^4$

$16m^8$

(2)

(Total for question 23 is 3 marks)

24 A football team sell home shirts and away shirts.
The ratio of home shirts to away shirts sold is 5:1 6 PARTS

The shirts can either be adult's shirts of children's shirts.
The ratio of adults shirts sold to children's shirts sold is 3:2 5 PARTS

What proportion of shirts sold are children's home shirts?

HOME SHIRTS $\frac{5}{6}$

CHILD SHIRTS $\frac{2}{5}$

$\frac{5}{6} \times \frac{2}{5}$ $\frac{1}{3}$

.....

(Total for question 24 is 2 marks)

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25 The average house price in London in 2017 was £474902
The average house price in London in 2018 was £469538

Calculate the percentage change in house prices between 2017 and 2018.

$\frac{\text{change}}{\text{original}} \times 100$

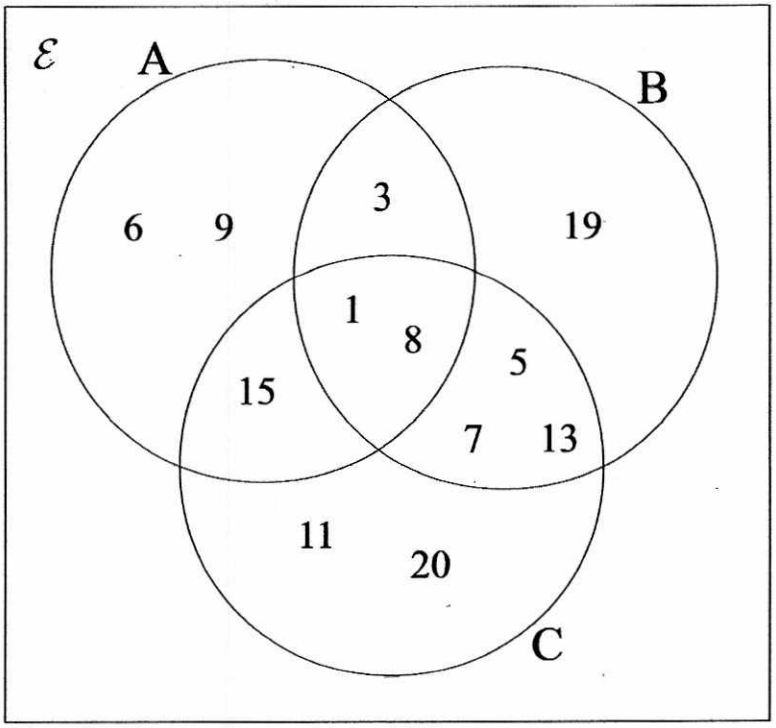
$\frac{-5364}{474902} \times 100 = 1.13\%$ DECREASE

(2dp)

- 1.13 %

(Total for question 25 is 2 marks)

26 Here is a Venn diagram.



(a) List the members of A ∩ B

1, 3, 8

A number is chosen at random from $\mathcal{E}$.

(b) Find $P(B \cup C)$

$\frac{10}{12}$ OR $\frac{5}{6}$

(Total for question 26 is 3 marks)

V V

27 100ml of liquid A and 200ml of liquid B are mixed together to make liquid C.
Liquid A has a density of 0.8g/ml. D
Liquid B has a density of 1.1 g/ml. D

Work the density of liquid C.

$$density = \frac{mass}{volume}$$

A: $mass = d \times v$
$= 0.8 \times 100$
$= 80g$

B: $mass = 1.1 \times 200$
$= 220g$

$$\text{Total density} = \frac{\text{Total Mass}}{\text{Total Volume}} = \frac{220 + 80}{100 + 200}$$

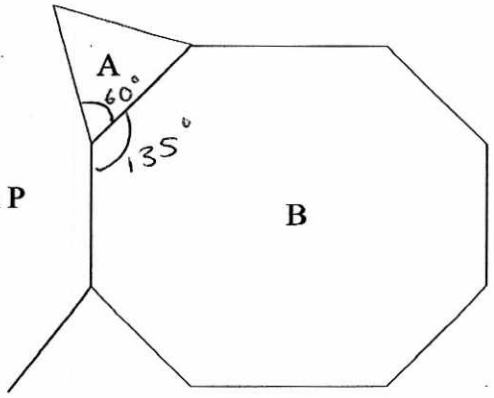
$$= \frac{300}{300}$$

$$= 1$$

1 g/ml

(Total for question 27 is 4 marks)

28



Polygon P

Shape A is a regular triangle. Shape B is a regular octagon.

Another regular polygon, P, is shown on the diagram.

How many sides does polygon P have?

You must show your working.

Each angle in equilateral triangle = 60°

Exterior Angle of Octagon = $\frac{360}{8}$ = 45°

Interior Angle = 180 − 45 = 135°

Interior Angle of P = 360 − 60 − 135

= 165°

Exterior Angle of P = 180 − 165

= 15°

$\frac{360}{15}$ = 24 sides

24

(Total for question 28 is 4 marks)

29 Adam is measuring the heights in cm of his tomato plants.

Height (cm)	M		Frequency
$140 < h \leqslant 150$	145	x	7
$150 < h \leqslant 160$	155	x	10
$160 < h \leqslant 170$	165	x	15
$170 < h \leqslant 180$	175	x	19
$180 < h \leqslant 200$	190	x	9
			60

1015
1550
2475
3325
1710
10075

Estimate the mean height.

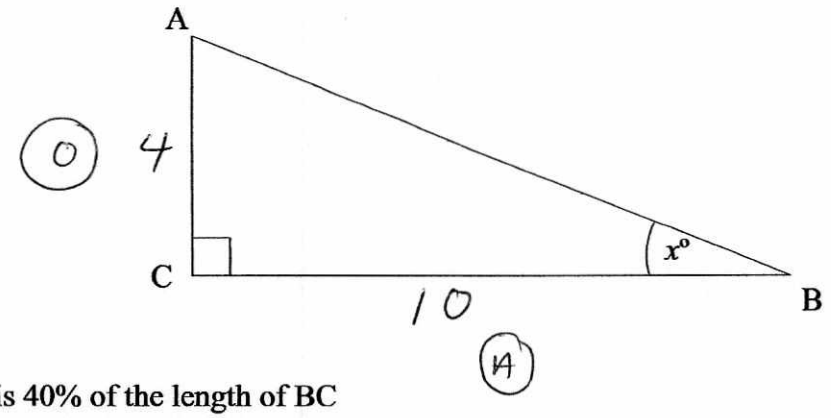
$10075 \div 60$

$= 167.916\dot{6}$

$= 167.9 \text{ cm}$ (1 dp)

(Total for question 29 is 3 marks)

30



The length AC is 40% of the length of BC

Find the size of angle ABC. Give your answer to 1 decimal place.

$$\tan x = \frac{O}{A}$$

$$= \frac{4}{10}$$

$$x = \tan^{-1}\left(\frac{4}{10}\right)$$

$$= 21.8^\circ$$

21.8 °

(Total for question 30 is 2 marks)

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31 Factorise $x^2 - 11x + 24$

$$(x - 3)(x - 8)$$

$(x - 3)(x - 8)$

(Total for question 31 is 2 marks)
