ANSWERS.

Write your name here

Surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 3 (Calculator)

Foundation Tier

Mock Set 1 – Autumn 2016
Time: 1 hour 30 minutes

Paper Reference
1MA1/3F

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.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
- 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.

Turn over ▷

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6/6/7/

S 5 2 6 2 7 A 0 1 2 4

PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write 41 675 correct to the nearest 1000

42000

(Total for Question 1 is 1 mark)

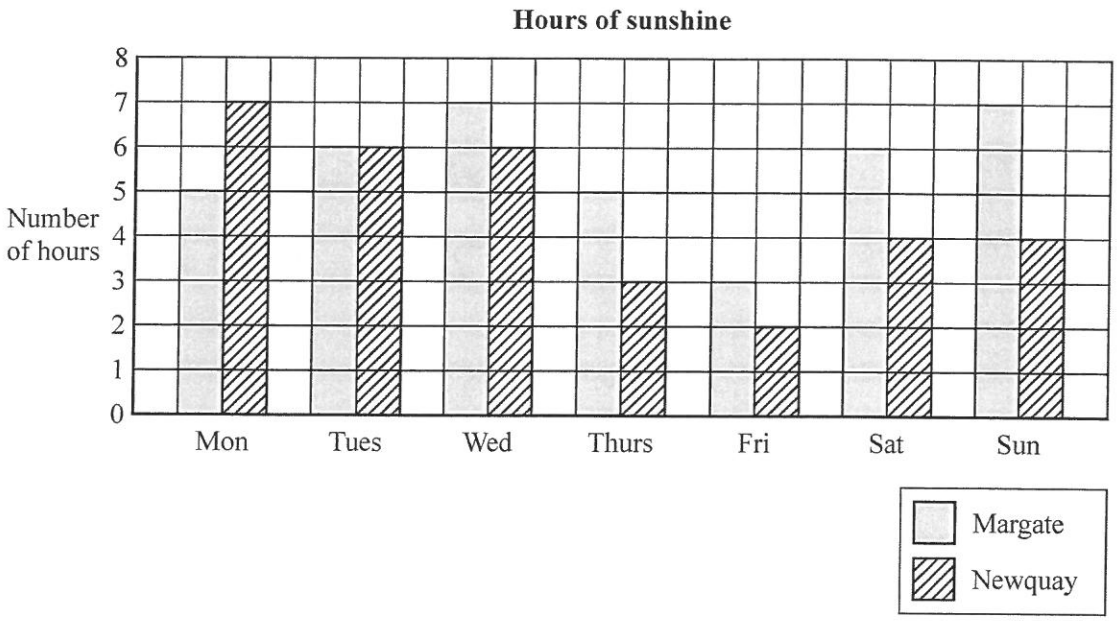
2 Write the following numbers in order of size.
Start with the smallest number.

3.25 3.2 3.05 3.205

3.05, 3.2, 3.205, 3.25

(Total for Question 2 is 1 mark)

3 The bar chart shows the number of hours of sunshine each day last week in Margate and in Newquay.



(a) On how many days did Newquay have less than 5 hours of sunshine?

4 days

(1)

In total, Margate had more hours of sunshine than Newquay last week.

(b) How many more?

MARGATE: 5 + 6 + 7 + 5 + 3 + 6 + 7 = 39

NEWQUAY: 7 + 6 + 6 + 3 + 2 + 4 + 4 = 32

39 − 32 = 7

7 hours

(2)

(Total for Question 3 is 3 marks)

4 Packs of batteries cost £2.85 each.
Ben has £45 to spend on batteries.

Ben buys as many packs of batteries as he can.
Work out how much change he should get from £45

$45 \div 2.85 = 15.789...$

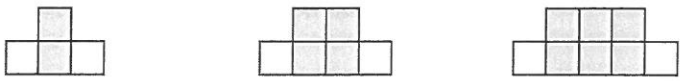
∴ CAN BUY 15 PACKS WHICH COST £42.75

∴ CHANGE IS $45 - 42.75 = £2.25$

£ 2.25

(Total for Question 4 is 3 marks)

5 Here is a sequence of patterns made from grey squares and white squares.



pattern number 1 pattern number 2 pattern number 3

(a) In the space below, draw pattern number 4

(1)

(b) Work out the total number of squares needed to make pattern number 7

ADD 2 EACH TIME

PATTERN 4 HAS 10

∴ PATTERN 7 HAS 10 + 2 + 2 + 2

16

(2)

Aqsa says,

> "The total number of squares needed to make pattern number 20 is double the total number of squares needed to make pattern number 10"

(c) Is Aqsa correct?
Give a reason for your answer.

AQSA IS NOT CORRECT. PATTERN 10 HAS 22 SQUARES AND PATTERN 20 HAS 42 SQUARES.

(2)

(Total for Question 5 is 5 marks)

6 Jim says,

"If you add any two different prime numbers the answer will never be a square number."

Jim is wrong.
Explain why.

7 + 2 = 9 2 AND 7 ARE PRIME
9 IS SQUARE

(Total for Question 6 is 2 marks)

7 Matthew has eight cards.
There is a number on each card.

3	1	2	3	6	8	7	2

(a) Work out the range of the numbers on the cards.

8 − 1 = 7

7
(1)

(b) Work out the median of the numbers on the cards.

1 2 2 (3 3) 6 7 8

3
(2)

(Total for Question 7 is 3 marks)

8 There are 375 pupils at a school.
195 of the pupils are boys. ∴ 180 GIRLS

$\frac{3}{5}$ of the boys walk to school.

$\frac{2}{3}$ of the girls walk to school.

Work out how many pupils walk to school.

$\frac{3}{5} \times 195 = 117$

$\frac{2}{3} \times 180 = 120$

$117 + 120 = 237$

237

(Total for Question 8 is 3 marks)

9 There are 19.5 litres of water in a water container.
A cup holds 210 m*l* of water.

How many cups can be completely filled using the water in the water container?

1 LITRE = 1000ml

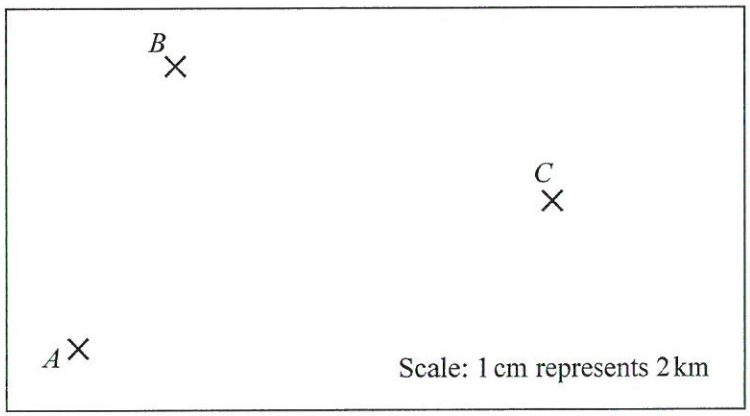
∴ WATER CONTAINER HOLDS 19,500ml.

$\frac{19500}{210} = 92.857...$

92

(Total for Question 9 is 3 marks)

10 This accurate scale drawing shows the positions of three villages, A, B and C.



Tom walks from A to B. 4cm
He then walks from B to C. 5.3cm } 9.3cm

Amy walks from A to C. 6.6cm

Tom walks more kilometres than Amy walks.

How many more?

$9.3 - 6.6 = 2.7\text{cm}$

$1\text{cm} = 2\text{km}$

$\therefore 2.7\text{cm} = 2 \times 2.7\ \text{km}$

$= 5.4\text{km}$

5.4 km
(4.3 To 6.5)

(Total for Question 10 is 3 marks)

11 There are 78 red counters and 52 yellow counters in a bag.

Write the ratio of the number of red counters to the number of yellow counters.
Give your ratio in its simplest form.

$78 : 52$

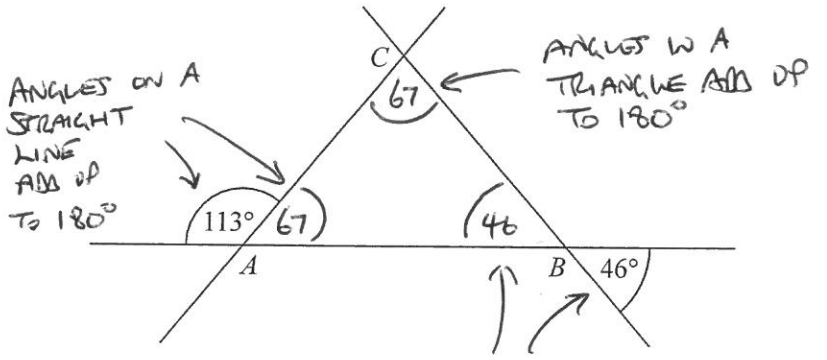
$= 39 : 26$

$= 3 : 2$

3:2

(Total for Question 11 is 2 marks)

12 Here is triangle ABC with each of its sides extended.



ANGLES ON A STRAIGHT LINE ADD UP TO 180°

ANGLES IN A TRIANGLE ADD UP TO 180°

VERTICALLY OPPOSITE ANGLES ARE EQUAL

Show that triangle ABC is isosceles.
Give a reason for each stage of your working.

SINCE $C\hat{A}B = A\hat{C}B$, TRIANGLE IS ISOSCELES

(Total for Question 12 is 4 marks)

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13 Here is part of an advert for a driving school.

> 8 out of 10 of the people we teach pass the driving test first time

Ali talked to 56 people who had been taught to drive by the driving school.
43 of these people passed the driving test first time.

Does this support what is said in the advert?
You must show how you get your answer.

8 OUT OF 10 IS $\frac{8}{10}$ OR 80%

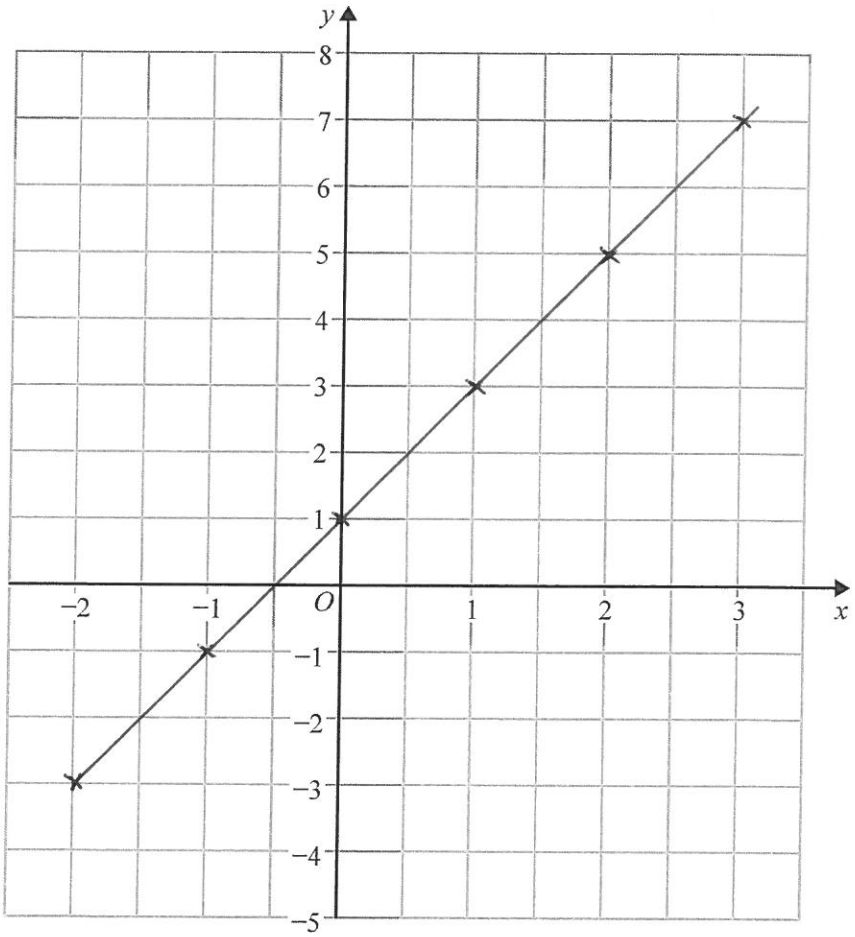
43 OUT OF 56 IS $\frac{43}{56}$ OR 76.8% IE LESS THAN 80%

∴ THIS DOES NOT SUPPORT WHAT IS SAID IN THE ADVERT.

(Total for Question 13 is 3 marks)

14 On the grid, draw the graph of $y = 2x + 1$ for values of x from -2 to 3

x	-2	-1	0	1	2	3
y	-3	-1	1	3	5	7



(Total for Question 14 is 3 marks)

15 The nth term of a number sequence is $n^2 + 7$

(a) Find the first three terms of this sequence.

8 11 16

(2)

128 is a term of this sequence.

(b) Which term?

$n^2 + 7 = 128$

$\therefore n^2 = 121$

$\therefore n = 11$

11

(1)

(Total for Question 15 is 3 marks)

16 Here are the ingredients needed to make 20 walnut biscuits.

Walnut biscuits	
Ingredients to make **20** biscuits	
50g	butter
100g	caster sugar
40g	flour
50g	walnuts
2	egg whites

Liz wants to make 50 walnut biscuits.

Work out the amount of each ingredient she needs.

$50 \div 20 = 2.5$

∴ MULTIPLY EACH QUANTITY BY 2.5

butter 125 g

caster sugar 250 g

flour 100 g

walnuts 125 g

egg whites 5

(Total for Question 16 is 3 marks)

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17 (a) Simplify $y^3 + y^3$

$2y^3$

(1)

(b) Factorise $m^2 + m$

$m(m+1)$

(1)

(c) Make h the subject of the formula $c = 3h + 5$

$c - 5 = 3h$

$\frac{c-5}{3} = h$

$h = \frac{c-5}{3}$

(2)

(Total for Question 17 is 4 marks)

18 Buses to Ashby leave a bus station every 24 minutes.
Buses to Barford leave the same bus station every 20 minutes.

A bus to Ashby and a bus to Barford both leave the bus station at 7 30 am.

When will a bus to Ashby and a bus to Barford next leave the bus station at the same time?

24, 48, 72, 96, (120)

20, 40, 60, 80, 100, (120)

120 MINUTES OR 2 HOURS LATER

9:30 am

(Total for Question 18 is 3 marks)

19 Amzol thinks that $(x + 5)^2 = x^2 + 25$ for all values of x.

Is Amzol right?
You must show how you get your answer.

$(x+5)^2 = (x+5)(x+5) = x^2 + 10x + 25$

∴ AMZOL IS NOT RIGHT

(Total for Question 19 is 2 marks)

20 Kim, Laura and Molly share £385

The ratio of the amount of money Kim gets to the amount of money Molly gets is 2 : 5
Kim gets £105 less than Molly gets.

What percentage of the £385 does Laura get?

K	M	DIFFERENCE
2	5	3
70	175	105

$\times 35$

$70 + 175 = 245$

$385 - 245 = 140$ LAURA GETS THIS

$\frac{140}{385} \times 100 = 36.4\%$

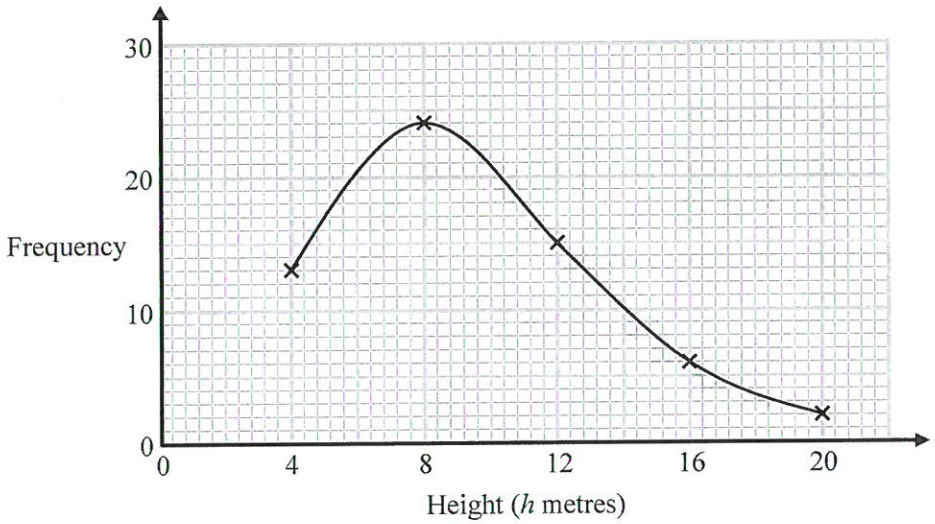
36.4 %

(Total for Question 20 is 4 marks)

21 The table shows information about the heights of 60 trees.

Height (h metres)	Frequency
$0 < h \leqslant 4$	13
$4 < h \leqslant 8$	24
$8 < h \leqslant 12$	15
$12 < h \leqslant 16$	6
$16 < h \leqslant 20$	2

Jacob drew this frequency polygon for the information in the table.
The frequency polygon is **not** correct.



Write down **two** things that are wrong with the frequency polygon.

1 MIDPOINTS NOT USED

2 POINTS SHOULD BE JOINED WITH STRAIGHT LINES

(Total for Question 21 is 2 marks)

22 The price of all rail tickets increased by 5%.
The price of a rail ticket from London to Ipswich increased by £2.30

Work out the price of the ticket before the increase.

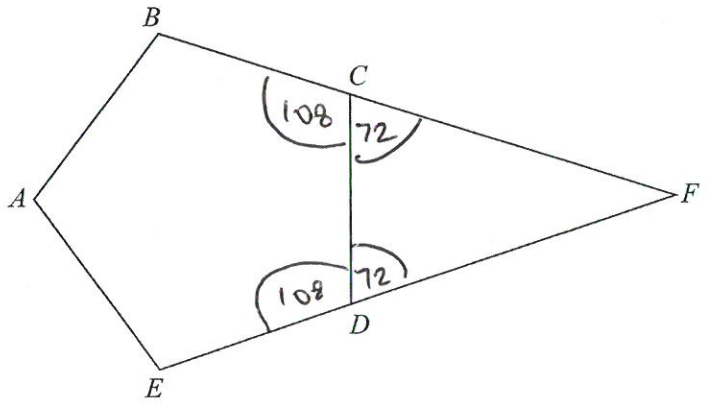
5% is £2.30

∴ 100% is 20 × £2.30 = £46

£ 46

(Total for Question 22 is 2 marks)

23



ABCDE is a regular pentagon.
BCF and *EDF* are straight lines.

Work out the size of angle *CFD*.
You must show how you get your answer.

EXTERIOR ANGLE OF A REGULAR PENTAGON = $\frac{360}{5}$ = 72

∴ INTERIOR ANGLE = 180 − 72 = 108

∴ $D\hat{C}F = C\hat{D}F = 72°$ BECAUSE ANGLES ON A STRAIGHT LINE ADD UP TO 180°

∴ $C\hat{F}D = 180 - 72 - 72 = 36°$ BECAUSE ANGLES IN A TRIANGLE ADD UP TO 180°

36 °

(Total for Question 23 is 3 marks)

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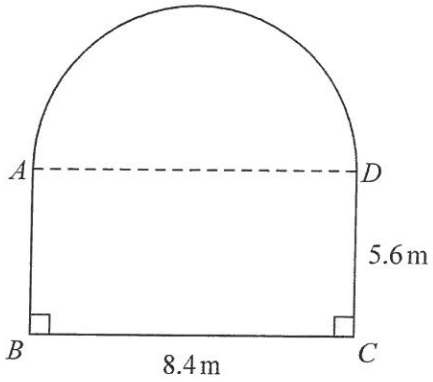
24 A garden is in the shape of a rectangle, $ABCD$, and a semicircle.
AD is the diameter of the semicircle.



Carol is going to cover the garden with fertiliser.

A box of fertiliser costs £4.99
Carol has been told that one box of fertiliser will cover 12 m² of garden.

(a) Work out the cost of buying enough fertiliser to cover the garden completely.

AREA OF RECTANGLE = $5.6 \times 8.4 = 47.04 m^2$

AREA OF SEMI CIRCLE = $\frac{1}{2} \times \pi \times 4.2^2 = 27.71 m^2$

∴ TOTAL AREA = $47.04 + 27.71 = 74.75 m^2$

$\frac{74.75}{12} = 6.23$ ∴ NEED 7 BOXES OF FERTILISER

$7 \times £4.99 = £34.93$

£ 34.93

(5)

Carol finds out that one box of fertiliser will cover more than 12 m² of garden.

(b) Explain how this might affect the number of boxes she needs to buy.

SHE MIGHT NOT NEED AS MANY BOXES

(1)

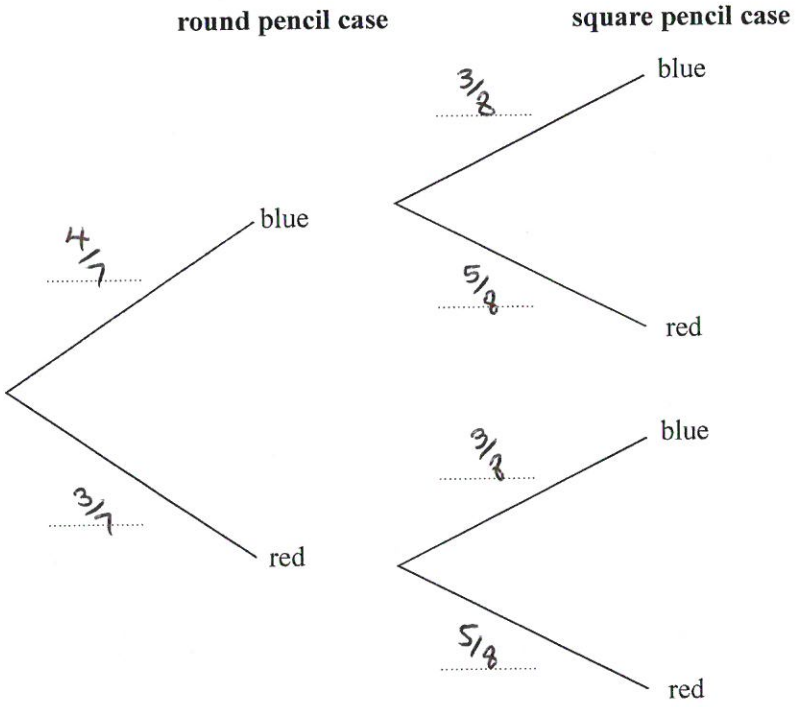
(Total for Question 24 is 6 marks)

25 Sameena has a round pencil case and a square pencil case.

There are 4 blue pens and 3 red pens in the round pencil case. 7
There are 3 blue pens and 5 red pens in the square pencil case. 8

Sameena takes at random one pen out of each pencil case.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that the pens Sameena takes are both red.

$\frac{3}{7} \times \frac{5}{8} = \frac{15}{56}$

$\frac{15}{56}$

(2)

(Total for Question 25 is 4 marks)

26 (a) Write 340 000 000 in standard form.

3.4×10^{8}

(1)

(b) Work out $(1.67 \times 10^{-7}) \div (9.11 \times 10^{-3})$

Give your answer as an ordinary number correct to 3 significant figures.

1.83×10^{-5}

0.0000183

(2)

(Total for Question 26 is 3 marks)

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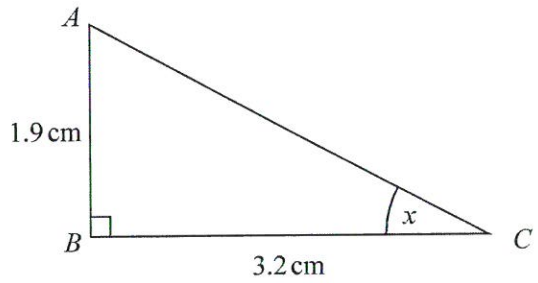
27 *ABC* is a right-angled triangle.



Work out the size of the angle marked x.
Give your answer correct to 1 decimal place.

$\tan x = \frac{1.9}{3.2}$

$\therefore x = \tan^{-1}\left(\frac{1.9}{3.2}\right)$

$= 30.7°$

30.7 °

(Total for Question 27 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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