Mathematics
November 2022 Practice 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.

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:
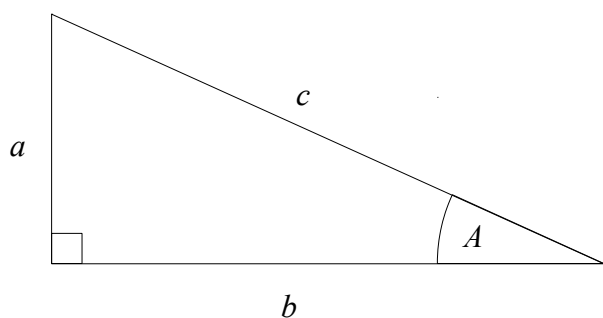
Area of a trapezium = $\frac{1}{2}(a + b) h$

Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry

In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \qquad \cos A = \frac{b}{c} \qquad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued = $P\left(1 + \dfrac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P $(A$ or $B)$ = P (A) + P (B) − P $(A$ and $B)$

END OF EXAM AID

1   Write 87% as a fraction.

....
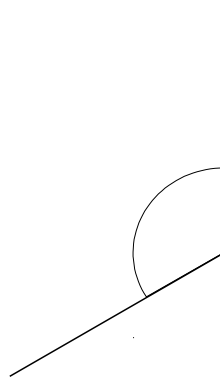**(Total for Question 1 is 1 mark)**

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

        134   153   203   146   154

....
(Total for Question 2 is 1 mark)

3

(a) Measure the size of the angle.

°
....
(1)

(b) Measure the length of the line.
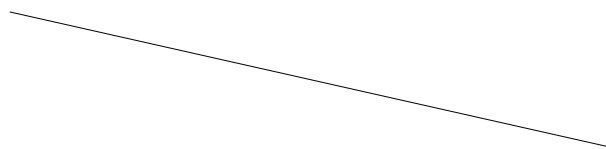
.... cm
(1)
(Total for Question 3 is 2 marks)

4   Change 4 hours to minutes.

.... minutes

(Total for Question 4 is 1 mark)

5   Change 750 metres to kilometres.

.... km

(Total for Question 5 is 1 mark)

6   Write the number 5.3 million in figures.

....

(Total for Question 6 is 1 mark)

7   Here are 4 number cards.

| 5 | 7 | 2 | 3 |

(a) Write down the largest three digit number that can be made using these number cards.

....

(1)

(b) Arrange the cards to give the smallest possible answer to the sum.

| | | + | | |

(1)

(Total for Question 7 is 2 marks)

8   Write the following fractions in order of size.
Start with the smallest fraction.

$$\frac{11}{20} \qquad \frac{5}{8} \qquad \frac{3}{4} \qquad \frac{3}{5} \qquad \frac{7}{10}$$

....

(Total for Question 8 is 2 marks)

9   Work out the difference, in minutes, between 55 minutes and $1\frac{3}{4}$ hours.

....minutes

(Total for Question 9 is 2 marks)

10   (a) Simplify $3 \times b \times 9$

....

(1)

(b) Simplify $2x - 3y - 6x - 4y$

....

(2)

(Total for Question 10 is 3 marks)

11 Here is a bar chart showing the average maximum monthly temperature (°C) in Greenwich.
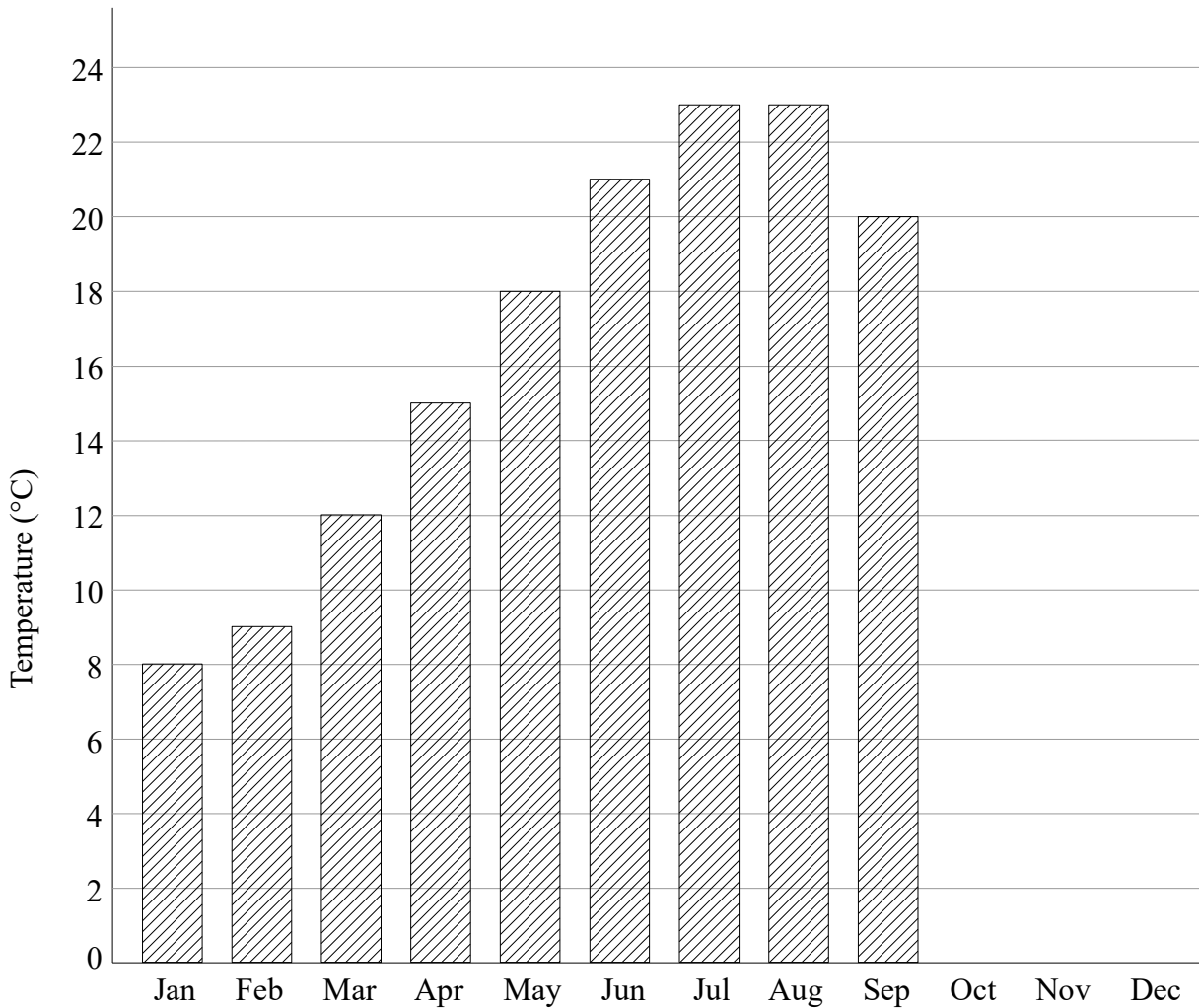
Here are the average monthly temperatures in October, November and December.

$$
\begin{array}{ll}
\text{October} & 16°C \\
\text{November} & 11°C \\
\text{December} & 8°C \\
\end{array}
$$

(a) Complete the bar chart to show this information.

(2)

(b) In which two months were the highest average temperatures recorded?

….........................… and ….........................…

(1)

(Total for Question 11 is 3 marks)

12 Expand $7(2h - 3)$

....

(Total for Question 12 is 1 marks)

13 A cup of tea costs £t
A cup of coffee costs £c

Write an expression, in pounds, for the cost of 5 cups of tea and 4 cups of coffee.

£ ....

(Total for Question 13 is 2 marks)

14 David is paid £34000 per year.
He is going to get a 3% increase in the amount of money he is paid.

Work out how much money David will be paid per year after the increase

£..

(Total for Question 14 is 2 marks)

15 $q = 6p - r$

$p = -4$
$r = 5$

Work out the value of q.

....

(Total for Question 15 is 2 marks)

16   There are 1100 students at a school.

540 students are girls, the rest are boys.

$\dfrac{1}{10}$ of the girls are left handed.

$\dfrac{1}{8}$ of the boys are left handed.

Work out the number of left handed students in the school.

....

(Total for Question 16 is 3 marks)

17 Noah and Mia saved a total of £482.
Mia saved £34 more than Noah.

How much did Noah save?

£.................................

(Total for Question 17 is 2 marks)

18 (a) Solve $5 = 19 - k$

$k =$ _____
(1)
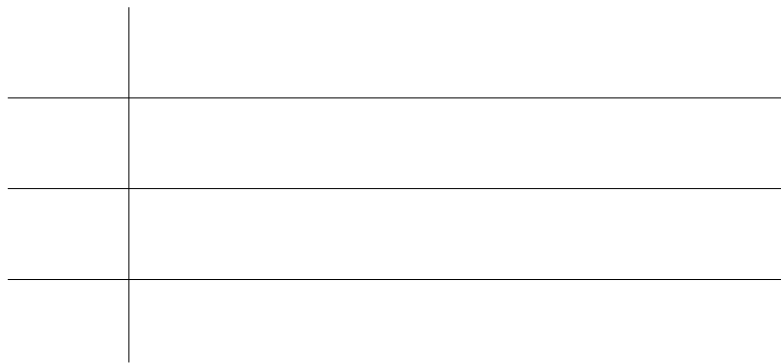
(b) Solve $\dfrac{d+3}{4} = 5$

$d =$ _____
(2)

(Total for Question 18 is 3 marks)

19 Here are the masses, in kg, of 15 objects.

   2.9   3.5   2.1   3.8   3.7

   1.6   3.1   2.4   2.9   1.5

   3.5   4.4   1.8   1.8   2.3

(a) Draw an ordered stem and leaf diagram to show this information.

```
1 | 5 6 8 8
2 | 1 3 4 9 9
3 | 1 5 5 7 8
4 | 4
```

Key:

(3)

(b) Work out the median mass.

.... kg

(2)

(Total for Question 19 is 5 marks)

20 Write down the reciprocal of $\dfrac{1}{3}$

…...........................…

(Total for Question 20 is 1 mark)

21 Molly gets paid £9.20 for each hour she works from Monday to Friday.
She gets paid £11.40 for each hour she works on Saturday.

Last week Molly worked 12 hours from Monday to Friday and 4 hours on Saturday.

Show that Molly was paid more than £150 last week.

(Total for Question 21 is 3 marks)

22 Solve $a^2 - 10a + 16 = 0$

(Total for Question 22 is 3 marks)

23 Here are a list of ingredients for making 12 flapjacks.

225 g of butter
75g of sugar
4 tbsp of honey
350g of oats

Connor wants to make 20 flapjacks.

How much of each ingredient will Connor need?

butter …......................... g

sugar …......................... g

honey ....…............. tbsp

oats …......................... g

(Total for Question 23 is 3 marks)

24 Here are the first 5 terms of a sequence.

9   14   19   24   29

Find an expression, in terms of n, for the nth term of this sequence.

....

(Total for Question 24 is 2 marks)

25 Here is a list of seven numbers.
One of the numbers is hidden.

| 11 | 6 | 7 | 10 | 7 | 9 | ? |

The mean of the numbers is 9.

Find the value of the hidden number.

....

(Total for Question 25 is 2 marks)

26 The scatter graph shows the scores of 16 students on their Biology and Physics tests.
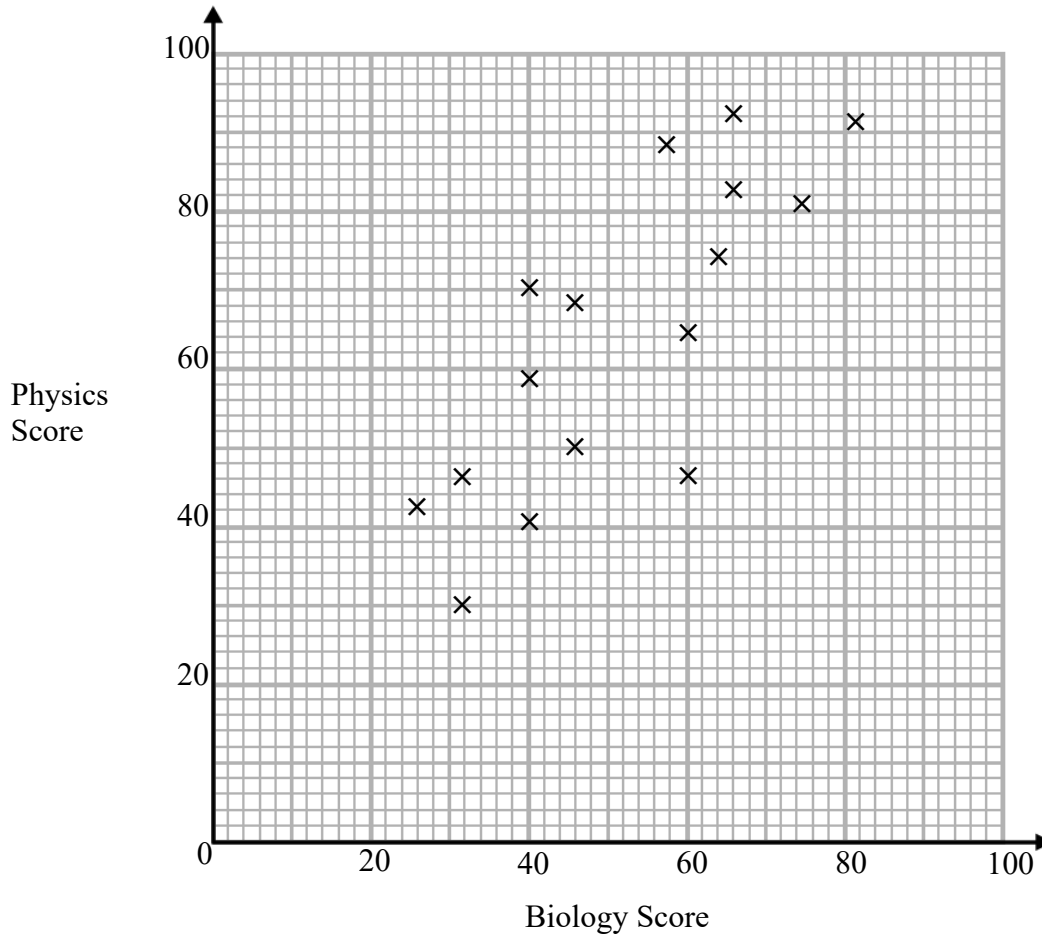
(a) What type of correlation does the scatter graph show?

....

(1)

(b) Another students scored 52 marks on their Biology test.
Estimate the Physics score for this student.

....

(2)

(Total for Question 26 is 3 marks)

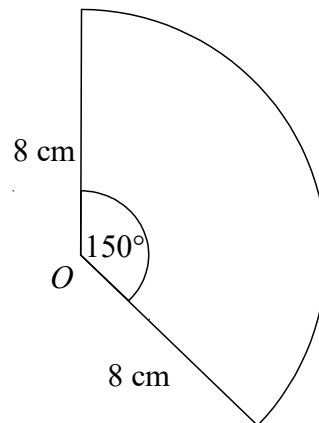**27** In a sale, the normal price of a TV is reduced by 20%.
The sale price of the TV is £660

Work out the normal price of the TV.

£ ....

(Total for Question 27 is 2 marks)

28 The diagram shows a sector, centre O.
The radius of the circle is 8 cm.
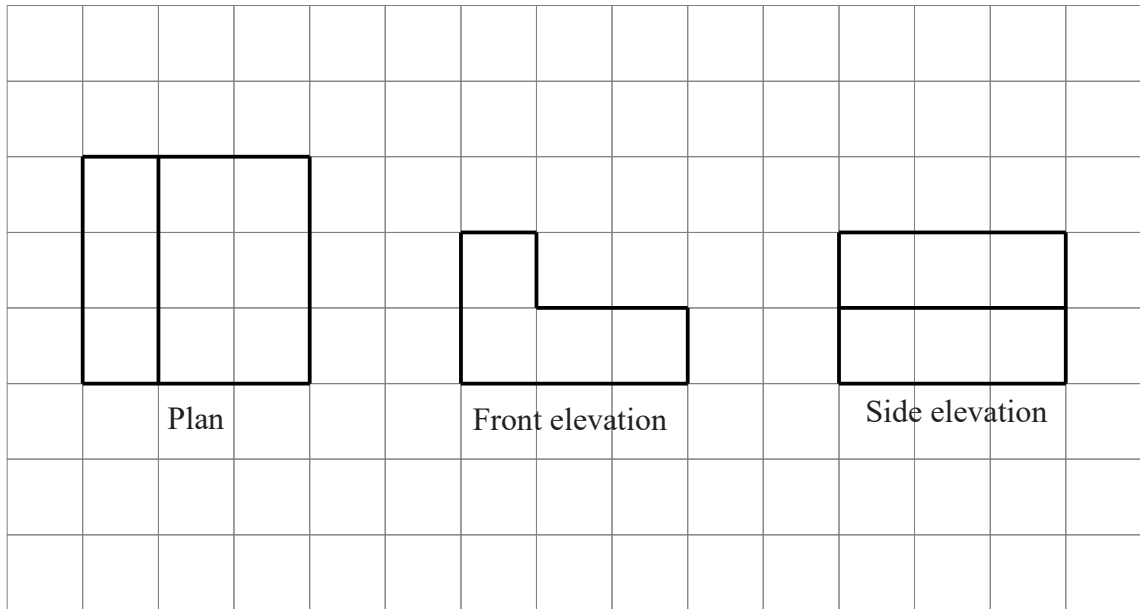The angle of the sector is 150°.

8 cm

150°

O

8 cm

Calculate the area of the sector.
Give your answer correct to 3 significant figures.

.... cm²

(Total for Question 28 is 2 marks)

29   The diagram shows the plan, front elevation and side elevation of a solid shape, drawn on a centimetre grid.

In the space below, draw a sketch of the solid shape.
Give the dimensions of the solid on your sketch.

30 Matt wants to invest £8000 for three years. He can choose between Bank A and Bank B.

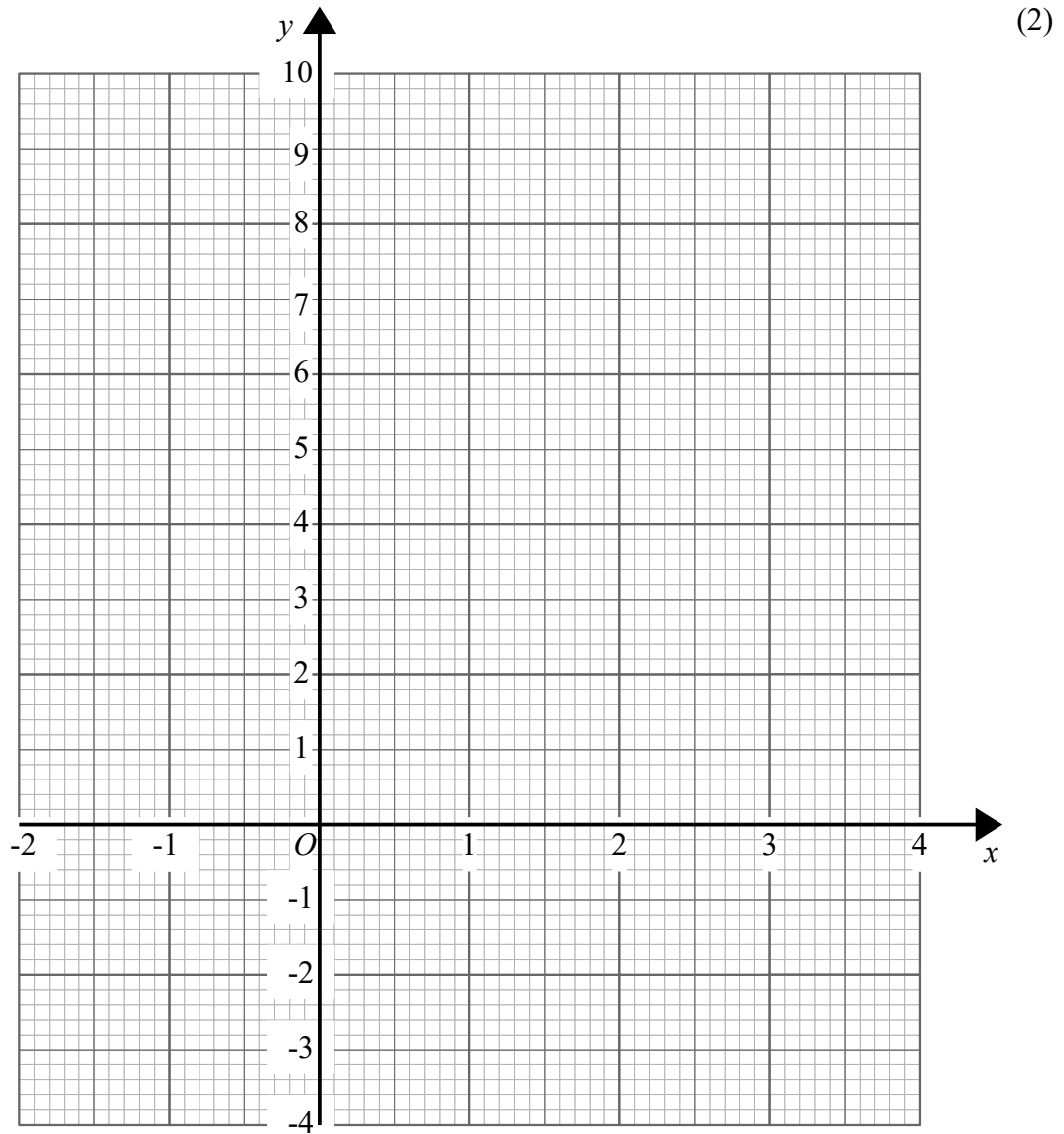| **Bank A**	**Bank B**
1.2% compound interest per annum	2% compound interest in the first year
	1% compound interest for each extra year

Which bank will give Matt the most interest after three years.
You must show your working.

(Total for Question 30 is 4 marks)

31 Complete the table of values for $y = x^2 - 3x - 1$

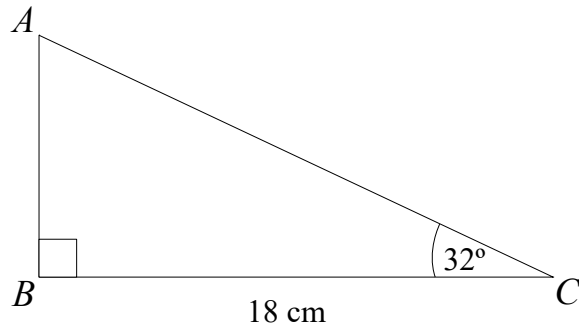| x	-2	-1	0	1	2	3	4
y							

(2)

(a) On the grid draw the graph of $y = x^2 - 3x - 1$ for values of x from –2 to 4   (2)

(b) Use the graph to find an estimate of the turning point of the graph $y = x^2 - 3x - 1$

....

(2)

(Total for Question 31 is 6 marks)

32

Calculate the area of triangle *ABC*.

…..........................cm^2

(Total for Question 32 is 4 marks)

33 It takes 5 builders 6 days to complete a job.

Work out how many days it would take 2 builders to complete the same job.

…..........................

(Total for Question 33 is 2 marks)

34 A number y is rounded to 1 decimal place.

The result is 19.3

Write down the error interval for y.

....

(Total for Question 34 is 2 marks)