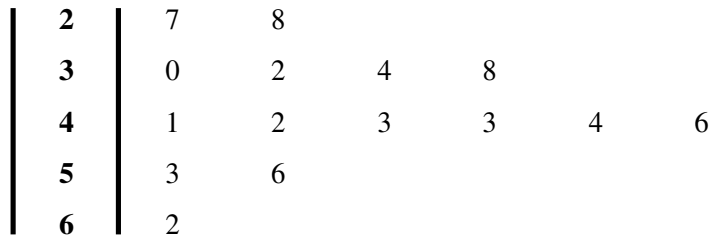# PLC Papers

Created For:

10b/Ma2

Suggested revision topics for June 11th and 14th

Stem & Leaf 1

Question 1

The stem and leaf diagram shows the ages, in years, of 15 members of a badminton club.

| Key: | **2** | 7 | means an age of 27 years |

```
2 | 7  8
3 | 0  2  4  8
4 | 1  2  3  3  4  6
5 | 3  6
6 | 2
```

(a)   How many members are aged over 40?

Answer ....

(1)

(b)   What is the median age of the members?

....

Answer .... years

(1)

(Total 3 marks)

Question 2

The ages, in years, of 10 members of a badminton club are

30 27 41 53 62 46 44 38 34 28

Represent this data as a stem-and-leaf diagram

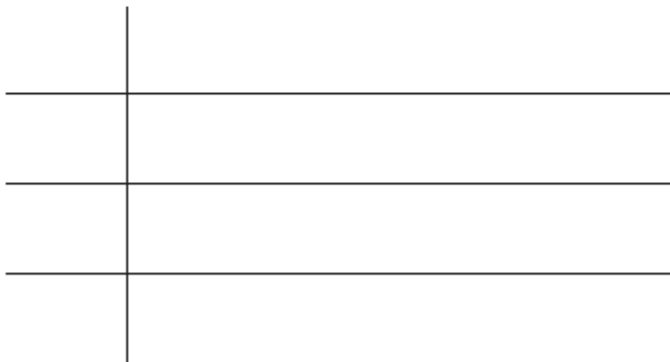You must show a key

....

....

....

....

....

....

....

(Total 4 marks)

Question 3

Here are the heights, in cm, of 15 female students.

146	176	163	151	158
169	152	167	158	164
170	147	172	155	154

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

Key:

(Total 3 marks)

Total Mark / 10

Stem & Leaf 1 PiXL Resource

Stem & Leaf 2

Question 1

Bonni runs Mr Fixit's exhaust repair shop.

She recorded the times, in minutes, it took to repair cars on one day.

25	30	35	18	12	42	22	15
22	26	32	18	34	45	21	33
17	18	35	49	31	32	19	24

Show this information in an ordered stem and leaf diagram.

(Total for Question 1 is 4 marks)

Some students did a test.

This back-to-back stem and leaf diagram shows information about their scores.

Boys' scores		Girls' scores
8 2	2	7 8
9 6 5 2	3	0 4 7 8
9 5 4 3 2 1 0	4	3 5 5 7 8
7 7 7 6 5 4	5	0 1 3 5 7 7 7 9 9
5 3 2 1	6	0 3 6

Key for boys' scores	Key for girls' scores
8 | 2 means 28	2 | 7 means 27

Compare and contrast the scores of these students.

(Total for Question 2 is 6 marks)

Total / 10

Averages for a frequency distribution 1

Question 1

Many people take taxis to a club.
One night, the manager at the club recorded the number of people in each taxi as it arrived.

His results are shown in the table.

Number of people	Frequency
1	5
2	9
3	14
4	11
5	5
6	6

Find the mean number of people in a taxi.

....

(Total 3 marks)

Averages (frequency distribution) PiXL Resource

Question 2

Zach has 10 CDs.
The table gives some information about the number of tracks on each CD.

Number of tracks	Frequency	
11	1	
12	3	
13	0	
14	2	
15	4	

Work out the mean.

(4 marks)

Question 3

Rosie had 10 boxes of drawing pins.

She counted the number of drawing pins in each box.

The table gives information about her results.

Number of drawing pins	Frequency	
29	2	
30	5	
31	2	
32	1	

Work out the mean number of drawing pins in a box.

....

(3)

Total Mark / 10

Averages for frequency distribution 2

Question 1

Amanda collected 20 leaves and wrote down their lengths.
Here are her results.

5	6	4	6	4	5	8	7	5	4
7	6	4	3	5	7	6	4	8	6

All the measurements are in centimetres.

(a)   Complete the following frequency table to show Amanda's results.

Length of leaves in cm	Tally	Frequency
3		
4		
5		
6		
7		
8		

(2)

(b)   Find the mode for the length of leaves.

………….. cm
(1)

(c)   Work out the range of the length of the leaves.

……………cm
(1)

John also collected leaves and measured their length.

The median length was 10 cm.
The mean was 9.4 cm
The range was 8 cm.
The shortest leaf was 5 cm.

Find the length of the longest leaf.

……………… cm**(2)**

(Total for Question 1 is 6 marks)

Angles – alternate, etc   PiXL Resource

Question 2

Mary threw a dice 24 times.

Here are the 24 scores.

3	5	3	4	1	2	4	5
6	2	3	4	3	1	4	3
2	3	5	5	3	4	2	1

(a) Complete the frequency table.

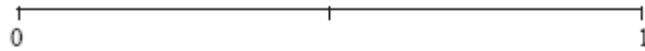| Score	Tally	Frequency
1		
2		
3		
4		
5		
6		

(3)

(b) Write down the mode.

....
(1)

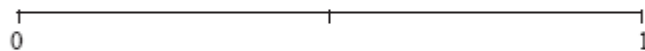**(Total for question 2 is 4 marks)**

Total Mark / 10

Basic ideas of probability 1

Question 1

(a) On the probability scale below, mark with the letter S, the probability it will snow in London in July next year.

```
├────────────────────┬────────────────────┤
0                                          1
```
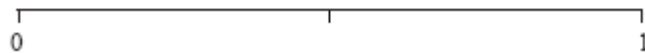
(1)

(b) On the probability scale below, mark with the letter F, the probability that at least one game of football will be played in London next year.

```
├────────────────────┬────────────────────┤
0                                          1
```

(1)

Jenny throws a fair coin once.

(c) On the probability scale below, mark with the letter H, the probability that it will come down Heads.

```
├────────────────────┬────────────────────┤
0                                          1
```

(1)

(Total 3 marks)

Question 2

There are 8 pencils in a pencil case.

1 pencil is red.
4 pencils are blue.
The rest are black.

A pencil is taken at random from the pencil case.

Write down the probability that the pencil is black.

....
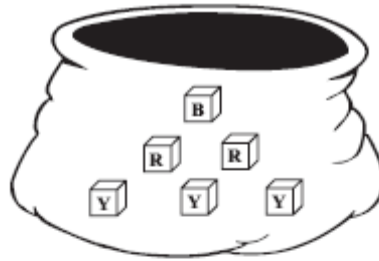
(Total 3 marks)

Question 3
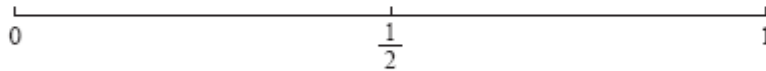
There are six cubes in a bag.

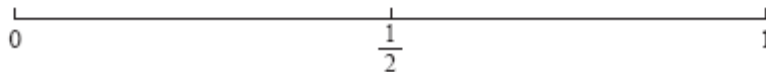1 cube is blue (B)

2 cubes are red (R)

3 cubes are yellow (Y)

Jakeem is going to take, at random, a cube from the bag.

(a) On the probability scale mark, with a cross (✗), the probability that the cube will be yellow.

```
├─────────────────────┼─────────────────────┤
0                     1                     1
                      ─
                      2
```

(1)

(b) On the probability scale mark, with a cross (✗), the probability that the cube will be white.

```
├─────────────────────┼─────────────────────┤
0                     1                     1
                      ─
                      2
```

(1)

(Total 2 marks)

(

Question 3

The table shows some information about five children.

Name	Gender	Age	Hair Colour
Aaron	Male	6	Black
Becky	Female	10	Brown
Kim	Female	6	Brown
Darren	Male	9	Blonde
Emily	Female	4	Red

(a) Write down the colour of Darren's hair.

....
(1)

(b) Write down the name of the oldest child.
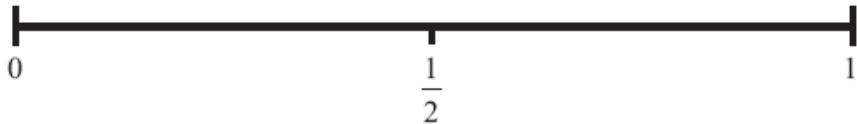
....
(1)

Total Mark / 10

Basic ideas of probability 2

Question 1

You roll an ordinary 6-sided dice.

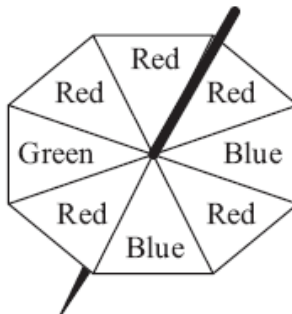(a) On the probability scale below, mark with a cross (×) the probability that you will get a 9

(1)

```
├─────────────────┼─────────────────┤
0                 1                 1
                  ─
                  2
```

You throw a fair 10p coin.

(b) On the probability scale below, mark with a cross (×) the probability that you will get a head.

(1)

```
├─────────────────┼─────────────────┤
0                 1                 1
                  ─
                  2
```

Here is a fair 8-sided spinner.

Jill is going to spin the spinner once.
The spinner will land on one of the colours.

(c) Which colour is the spinner most likely to land on?

(1)

....

(d) Write down the probability that the spinner will land on green.

(1)

....

(4 marks)

Question 2

Sally recorded the musical instrument played by each of 30 students in the school orchestra.
The table shows her results.

Musical instrument	Frequency	
Clarinet	5	
Guitar	12	
Flute	7	
Drums	6	

One of the students in the school orchestra is chosen at random.

(a) Find the probability that this student plays the flute.

(2)

Question 3

The sizes of the first eleven pairs of shoes sold in a shop one morning are

8   5   4   5   7   10   9   5   11   5   6

(a)   What is the mode of the data?

....

Answer ....

(1)

(b)   What is the median shoe size?

....

Answer ....

(2)

(c)   Which of the mode or median would be more useful to the shopkeeper when he is ordering more shoes?
Explain your answer.

....

....

(1)
(Total 4 marks)

Total Mark / 10

Basic ideas of probability PiXL Resource

Tree diagrams 1

Question 1

The probability that John will be late for school on any day is 0.4

(a) Complete the probability tree diagram for both Monday and Tuesday.

(2)

(b) Work out the probability that John will be late for school on both days.

....

(2)

Question 2

There are 10 socks in a drawer.

7 of the socks are brown.
3 of the socks are grey.

Bevan takes at random two socks from the drawer at the same time.

(a) Complete the probability tree diagram.

(2)

1st sock   2nd sock

$\frac{7}{10}$ Brown

.... Brown

.... Grey

.... Grey   Brown

.... Grey

(b) Work out the probability that Bevan takes two socks of the same colour.

....

(3)

Total Mark / 10

Tree diagrams 2

Question 1

Hannah is going to play one badminton match and one tennis match.

The probability that she will win the badminton match is $\dfrac{9}{10}$

The probability that she will win the tennis match is $\dfrac{2}{5}$

(a) Complete the probability tree diagram.

(2)

badminton   **tennis**

$\dfrac{2}{5}$ — Hannah wins

$\dfrac{9}{10}$ — Hannah wins

.... — Hannah does not win

.... — Hannah wins

Hannah does not win

.... — Hannah does not win
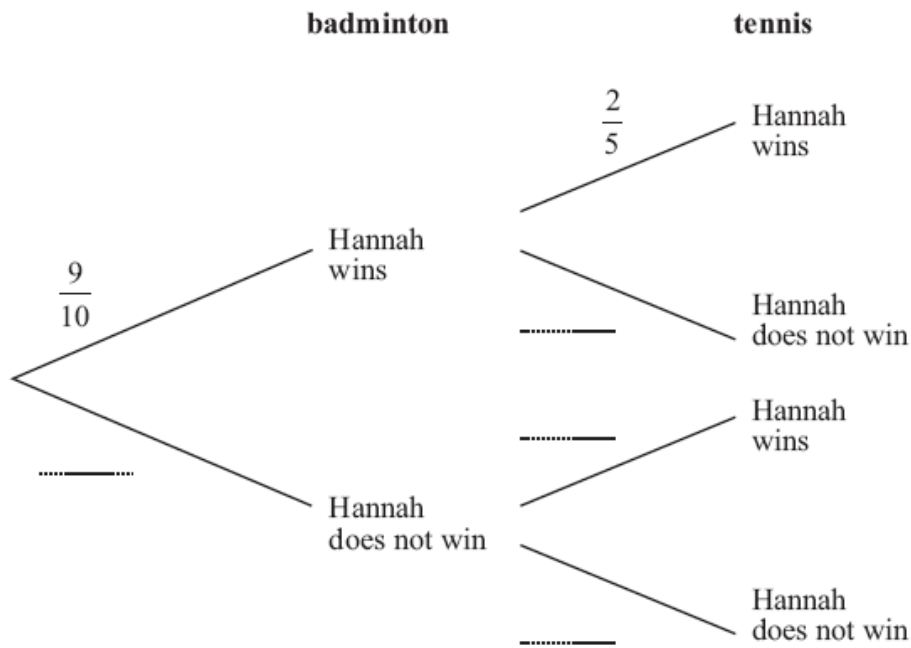
(b) Work out the probability that Hannah will win **both** matches.

(2)

....

(4 marks)

Question 2

Nicola is going to travel from Swindon to London by train.

The probability that the train will be late leaving Swindon is $\frac{1}{5}$

If the train is late leaving Swindon, the probability that it will arrive late in London is $\frac{7}{10}$

If the train is **not** late leaving Swindon then the probability that it will arrive late in London is $\frac{1}{10}$

(a)   Complete the probability tree diagram.

leaves Swindon   **arrives in London**

late

$\frac{1}{5}$ late

not late

late

not late

not late

(3)

(b)   Work out the probability that Nicola will arrive late in London.

………………….

(3)

Total Mark / 10

Angles – alternate, corresponding, opposite

Question 1
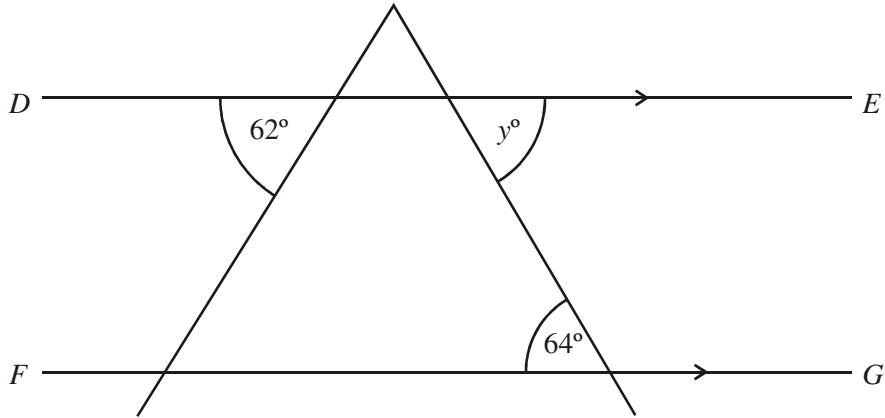
Diagram **NOT** accurately drawn

DE is parallel to *FG*.

(i)   Find the size of the angle marked *y*°.

.........................°

(ii)   Give a reason for your answer.

....
.

(Total 2 marks)

Question 2

(c)   Work out the sizes of angles *r* and *s*.
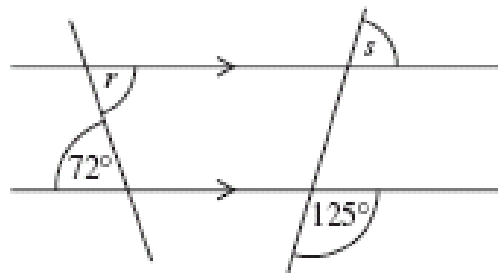
Not drawn accurately

Question 3

....

....

Total Mark /

....

Answer *r* = ... degrees   *s* = ... degrees   *(2 marks)*
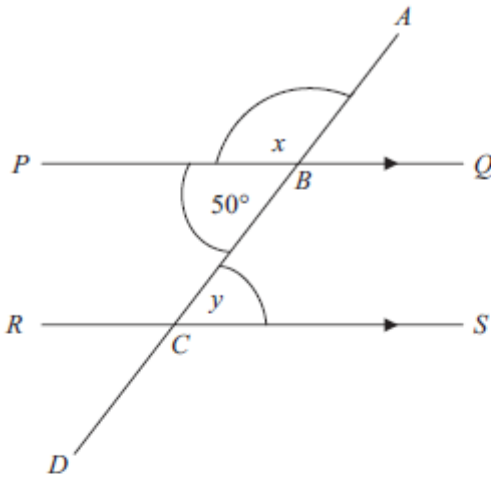
Diagram **NOT** accurately drawn

ABCD is a straight line.
PQ is parallel to RS.

(a) (i) Write down the size of the angle marked x.

.... °

(ii) Give a reason for your answer.

....

....

(2)

(b) (i) Write down the size of the angle marked y.

.... °

(ii) Give a reason for your answer.

....

....

(2)

(Total 4 marks)
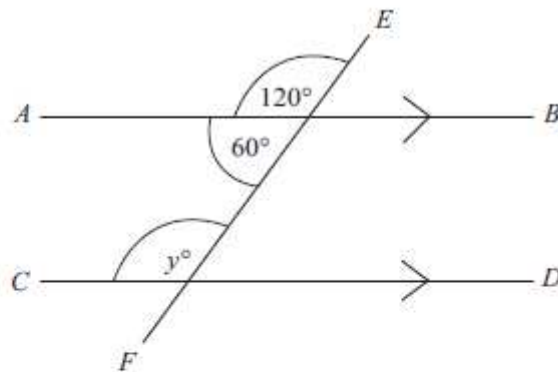
Diagram **NOT** accurately drawn

AB is parallel to *CD*.
EF is a straight line.

(i) Write down the value of *y*.

$y =$ ....

(ii) Give a reason for your answer.

....

(Total 2 marks)

Total / 10

Alternate, opposite and corresponding angles 2

Question 1

Diagram **NOT** accurately drawn
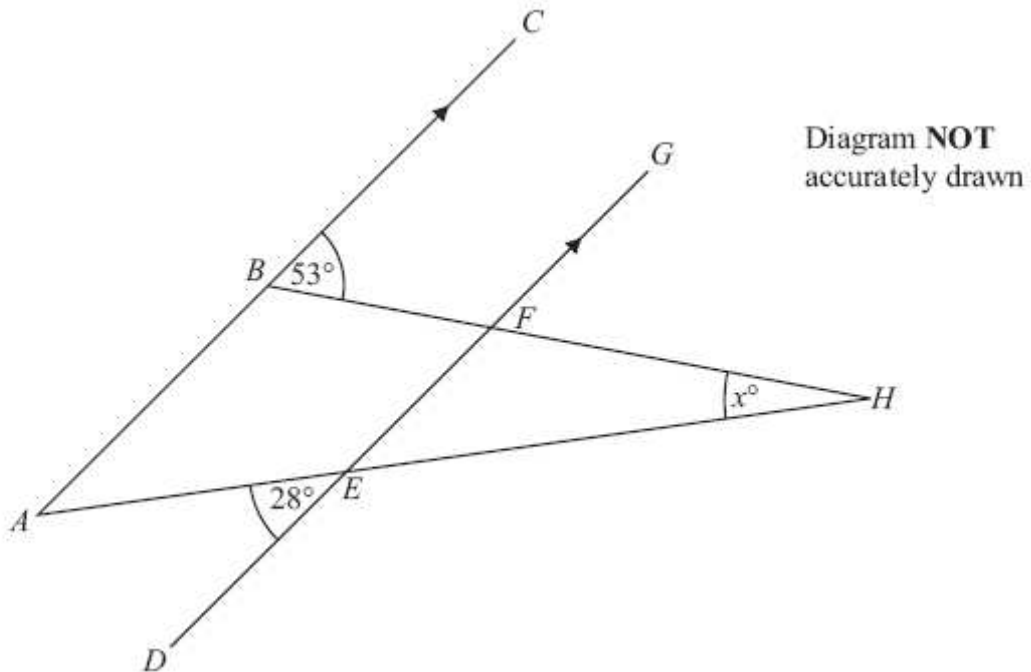
ABC and *DEFG* are parallel.
AEH and *BFH* are straight lines.

Work out the size of the angle marked $x°$.
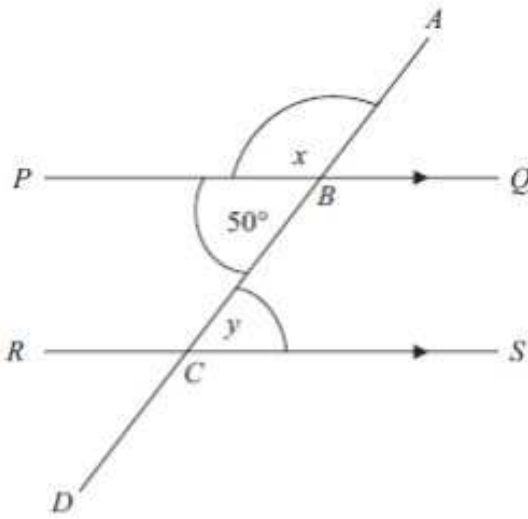
.... °

(Total 2 marks)

Question 2

Diagram **NOT**
accurately drawn

ABCD is a straight line.
PQ is parallel to *RS*.

(a) (i) Write down the size of the angle marked *x*.

.... °

(ii) Give a reason for your answer.

....

....

(Total 2 marks)

a) Find the size of angle x.

_____ 1
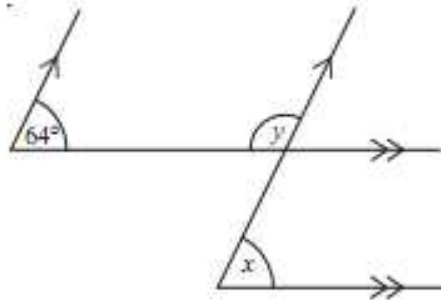
b) Work out the size of angle y.

_____ 2

a) Find the size of angle x.

_____ 1
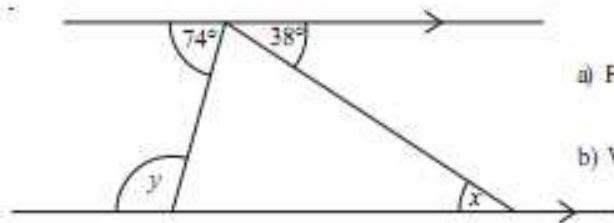
b) Work out the size of angle y.

_____ 2

(Total 6 marks)

Total / 10

Angles – Lines, triangles, quadrilaterals

Question 1

(a)
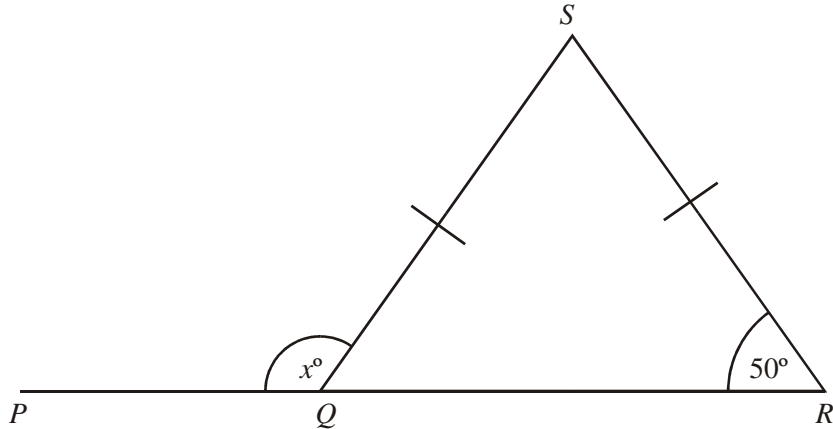
Diagram **NOT** accurately drawn

PQR is a straight line.   *SQ = SR*.

(i)   Work out the size of the angle marked *x*°

......................°

(ii)   Give reasons for your answer.

....

....

   .

(Total 3 marks)
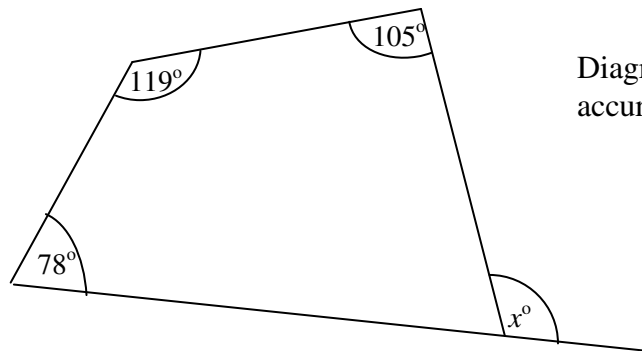
Question 2

Diagram **NOT**
accurately drawn

Work out the value of *x*.

x = …………………
(Total 3 marks)

Diagram **NOT** accurately drawn
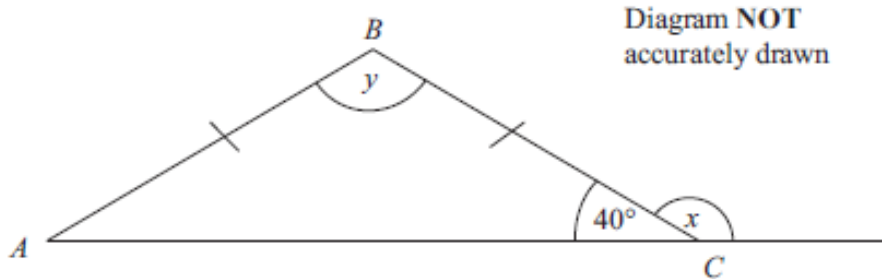
In triangle *ABC*,
AB = *BC*,
Angle *ACB* = 40°

(a) (i) Work out the size of angle *x*.

.... °

(ii) Give a reason for your answer.

....

....

(2)

(b) (i) Work out the size of angle *y*.

.... °

(ii) Give a reason for your answer.

....

....

(2)

Total Mark / 10

Angles 2

Question 1
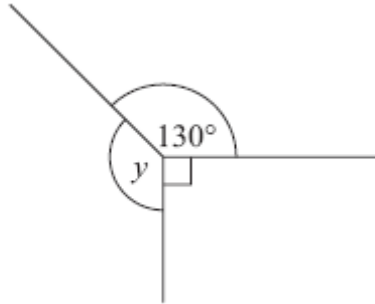
Diagram **NOT** accurately drawn

(i) Work out the size of the angle marked *y*.

....°

(ii) Give a reason for your answer.

....

(Total marks 2)

Question 2
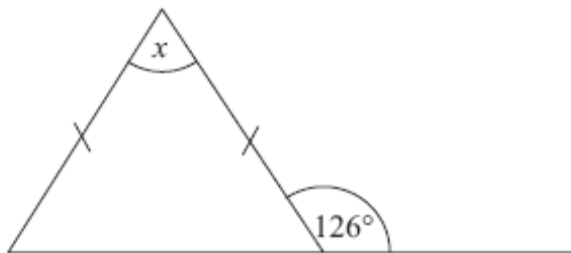
Diagram **NOT** accurately drawn

Work out the size of the angle marked *x*.
Give reasons for your answer.

....°

(Total marks 1)

(a) Write down the special name for this type of angle.
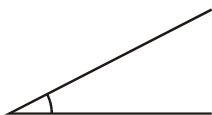
....
(1)

(b) Write down the special name for this type of angle.

....
(1)

(c)

230°

120°
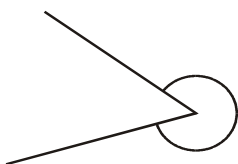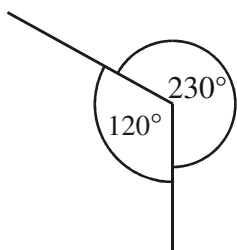
Diagram **NOT**
accurately drawn

This diagram is wrong.
Explain why

....

(1)

(Total marks 3)

Question 4
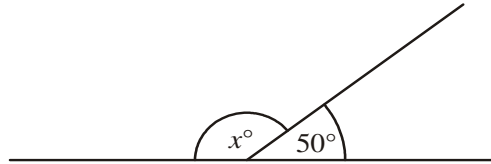
Diagram **NOT** accurately drawn

(a) Work out the size of the angle marked $x°$.

………………………$°$

(b) Give a reason for your answer.

……………………………………………………………………………………………………

(Total 2 marks)
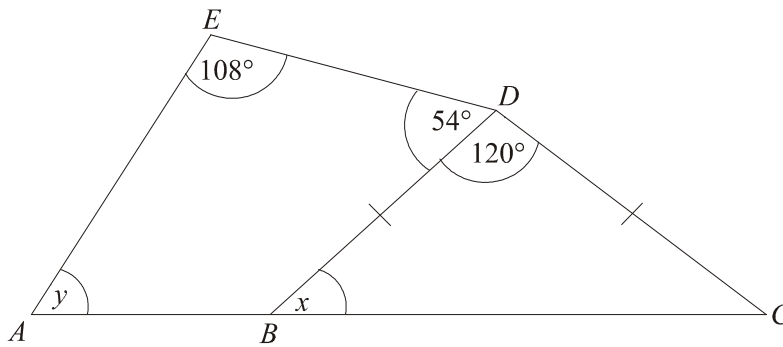
Question 5

Diagram **NOT** accurately drawn

In the diagram, *ABC* is a straight line and *BD* = *CD*.

(a) Work out the size of angle *x*.

...................................$°$

(1)

(b) Work out the size of angle *y*.

...................................$°$

(1)

(Total 2 marks)

Total / 10

Exterior and interior angles of a polygon 1

Question 1

Diagram **NOT** accurately drawn

The exterior angle of a regular polygon is 40°.

Work out the number of sides of this regular polygon.

....

(Total 2 marks)

Question 2

A regular polygon has an exterior angle of 20°

20°
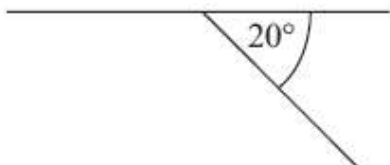
Diagram **NOT** accurately drawn

How many sides has this regular polygon?

....

(Total 2 marks)

Question 3

The size of each exterior angle of an regular polygon is 24°.

Work out the number of sides the polygon has.

....

(Total 2 marks)

Polygons PiXL Resource

Question 4

A regular polygon has 12 sides.

Work out the size of an exterior angle of this regular polygon.

.... °

(Total 2 marks)
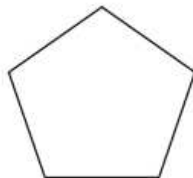
Question 5

Diagram **NOT** accurately drawn

Work out the size of an exterior angle of a regular pentagon.

.... °

(Total 2 marks)

Total Mark / 10

Exterior and interior angles of a polygon 2

Question 1

Diagram **NOT** accurately drawn

40°

The exterior angle of a regular polygon is 40°.

Work out the number of sides of this regular polygon.

(Total 2 marks)

Question 2

Calculate the value of x.
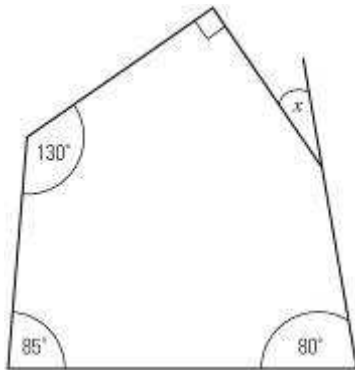
(Total 2 marks)

Question 3

Calculate the sum of the interior angles for a decagon.   **(Total 2 marks)**

Question 4

The sum of the interior angles for a regular polygon is 1980°. Write down the number sides of the polygon.

(Total 2 marks)

Question 5

AB and BC are two sides of a regular polygon, Explain why this polygon will not tessellate.
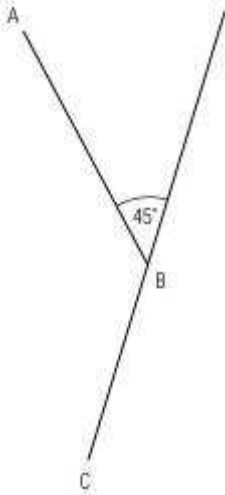
(Total 2 marks)

Total / 10

Pythagoras

Question 1
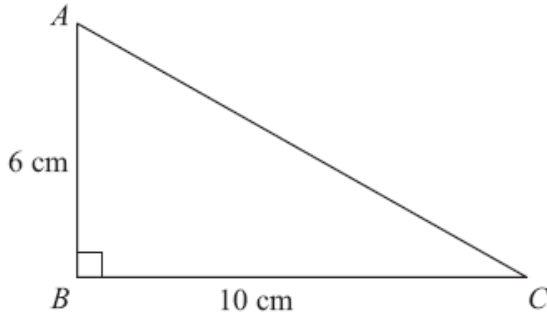
Diagram **NOT**
accurately drawn

ABC is a right-angled triangle.
$AB = 6$ cm.
$BC = 10$ cm.
Calculate the length of AC.
Give your answer correct to 1 decimal place.

.... cm

(Total 3 marks)

Question 2

!..
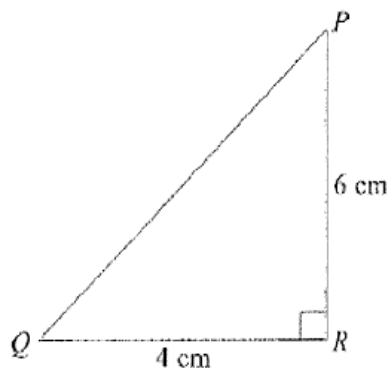
Diagram **NOT**
accurately drawn

PQR is a right-angled triangle.

$PR = 6$ cm.
$QR = 4$ cm.

Work out the length of PQ.
Give your answer correct to 3 significant figures.

(3)

Question 3

A ————————————————— B

10 cm   17 cm

D   C
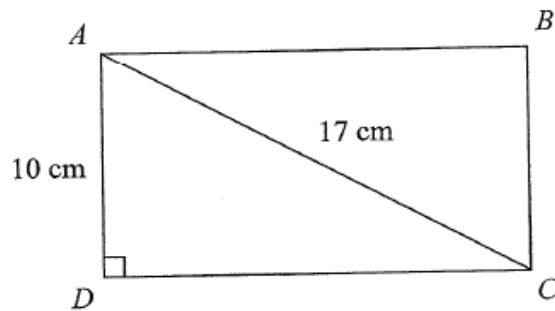
Diagram **NOT**
accurately drawn

ABCD is a rectangle.
AC = 17 cm.
AD = 10 cm.

Calculate the length of the side *CD*.
Give your answer correct to one decimal place.

(4)

Total Mark / 10

Pythagoras theorem 2

Question 1

Alan and Bhavana are planning their fitness program.
They plan to run on parts of a field.
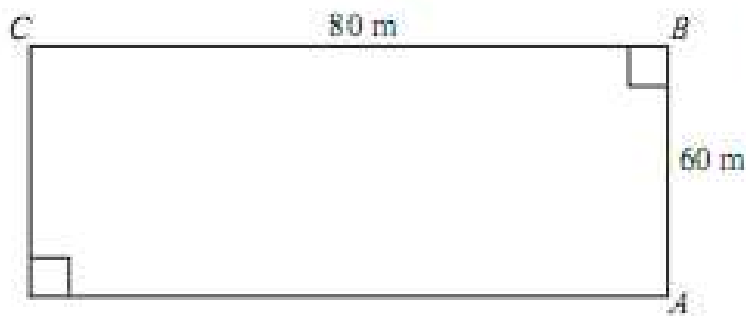The diagram below shows a rectangular field 80 metres by 60 metres.

Alan runs around the field from A to C via B.

Bhavna runs directly across the diagonal of the field from A to C.

   (a) How far does Alan run?
   (b) How far does Bhavna run?
   (c) Who has to run furthest and by how much?

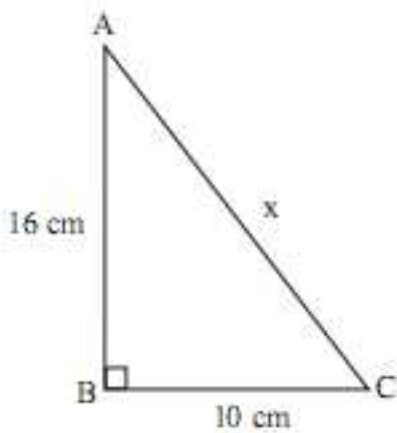   You must explain your answer.

(Total 3 marks)

Question 2

Find the length of side BC.
Give your answer correct to one decimal place.
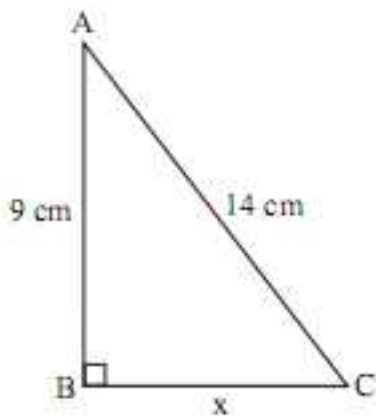
BC = _____ cm

Find the length of side AC.
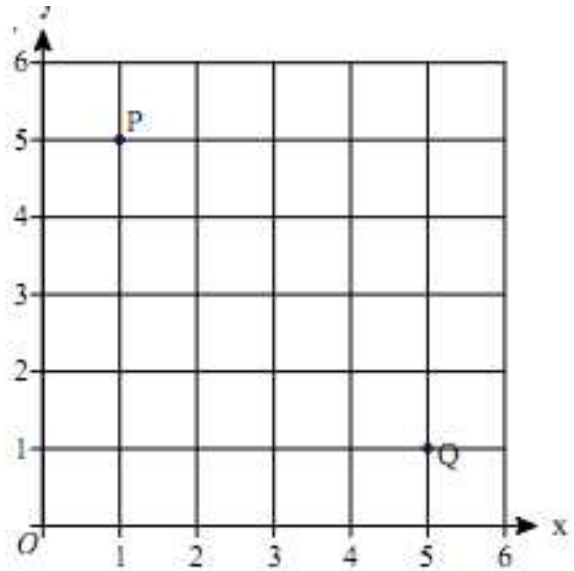Give your answer correct to one decimal place.

BC = _____ cm

(Total 4 marks)

Pythagoras theorem 2   **PiXL Resource**

Points P and Q are on a centimetre grid as shown.
Find the distance PQ, giving your answer correct
to one decimal place.

Distance PQ = _____   **3**

(Total 3 marks)

Total / 10

Index notation and index laws 1

Question 1

Simplify

(i) $x^4 \times x^3$

....
(1)

(ii) $y^6 \div y^2$

....
(1)

Question 2

Write as a power of 5

(i) $5^4 \times 5^2$

....

(1)

Question 3

Simplify $\quad 3x^2y \times 5xy^3$

....

(2)

Question 4

Simplify

(i) $x^4 \times x^3$

(ii) $y^6 \div y^2$

(2)

Question 5

Write as a power of 7

(i) $7^5 \times 7^3$

....

(ii) $7^{10} \div 7^4$

....

(iii) $\dfrac{7^5 \times 7^3}{7^{10} \div 7^4}$

....

(Total 3 marks)

Total Mark / 10

Index notation and index laws 2

Question 1

a) Evaluate 2^4 _____ **1**

b) Which is bigger and by how much? 2^5 or 5^2

_____ is bigger by _____ **2**

<div align="right">(Total 3)</div>

Question 2

Write as a power of 4, $4^3 \times 4^2$ _____

Write as a power of 6, $6^5 \div 6^2$ _____

Simplify the following: $x^5 \times x^2$ _____

Simplify the following: $\dfrac{y \times y^6}{y^2}$ _____

<div align="right">(Total 3)</div>

Question 3

a) Simplify $x^3 \times x^5$ _____

b) Simplify $y^{12} \div y^3$ _____

c) Simplify $(3xy^2)^3$ _____

d) Simplify $3x^2y \times 4xy^3$ _____

(Total 4)

Total / 10

Index notation and index laws 2   **PiXL Resource**

Substitution 1

Question 1

$M = 3p - 8$

Work out the value of M when $p = 6$

$M = $ ....

(Total 2 marks)

Question 2

Kalim thinks of a number.
He multiplies the number by 2
He then adds 3

His answer is 27

(a)   What number did Kalim think of?

....
(2)

Emma uses the formula $P = 2a + b$
to find the perimeter of this triangle.

(b)   Find the value of P when

$a = 5$ and $b = 3$
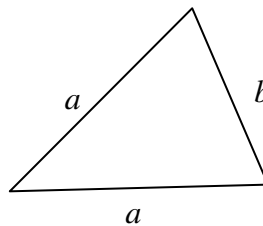
$P = $ ....
(2)

(Total 4 marks)

Question 3

Tayub said, "When $x = 3$, then the value of $4x^2$ is 144".

Bryani said, "When $x = 3$, then the value of $4x^2$ is 36".

(a) Who was right?

Explain why.

...……………………………………………………………………………………...

...……………………………………………………………………………………

(2)

(b) Work out the value of $2(x + 1)^2$ when $x = 3$.

....

(2)
(Total 4 marks)

Total Mark / 10

Substitution 2

Question 1

$V = 3b + 2b^2$

(a) Find the value of V when $b = -4$

(2)

....

(total 2 marks)

Question 2

$P = 3a + 2b^2$

(a) Find the value of P when $a = 5$ and $b = -4$

(2)

....

(total 2 marks)

Question 3

This formula is used to work out the cost, £C, of hiring a car for d days.

$C = 35d + 40$

Karl wants to hire a car for 4 days.

(a) How much will this cost Karl?

(2)

£ ....

Barry hired a car at a cost of £355

(b) For how many days did Barry hire the car?

<div align="right">(2)</div>

.... days

<div align="right">**(total 4 marks)**</div>

Question 4

Work out the value of $5t^2 - 7$ when $t = 4$

....

<div align="right">**(total 2 marks)**</div>

Total Mark / 10

Linear Graphs 1

Question 1

(a) Complete the table of values for $y = 3x + 2$

x	-2	-1	0	1	2
y		-1		5	

(2)

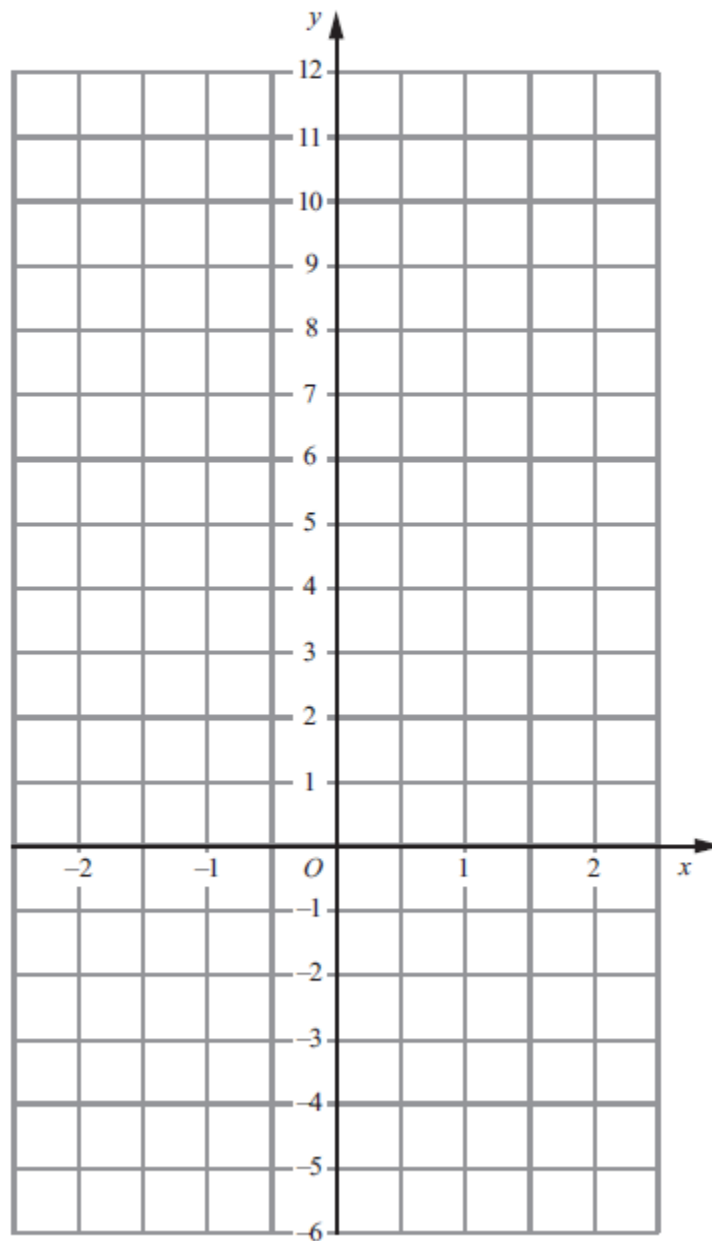(b) On the grid, draw the graph of $y = 3x + 2$

(2)

(Total 4 marks)

Linear Graphs 1 PiXL Resource
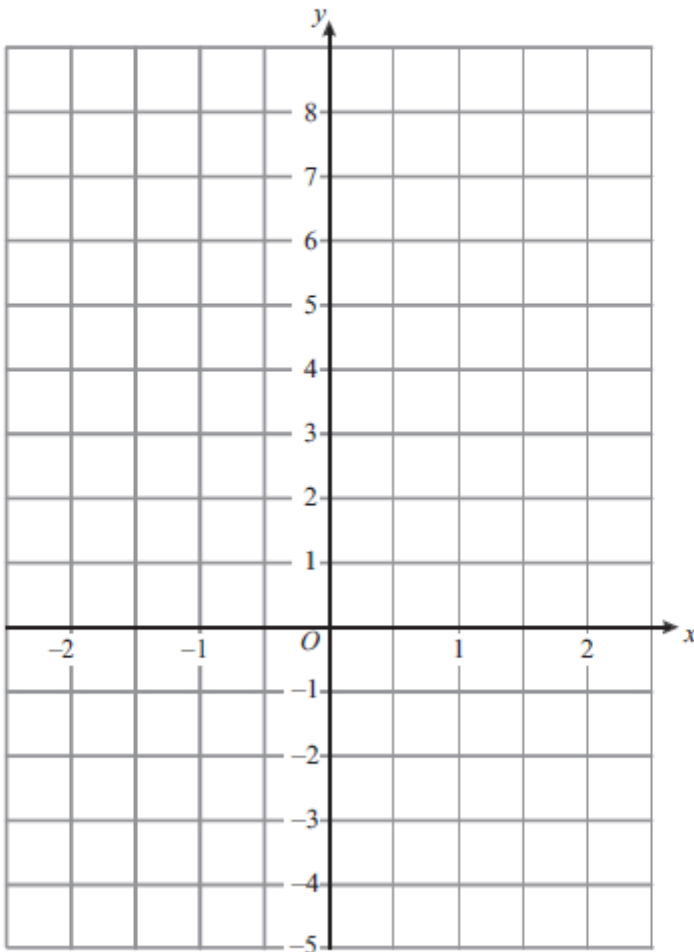
(a) Complete the table of values for $y = 4x + 3$

x	-2	-1	0	1	2
y		-1			11

(2)

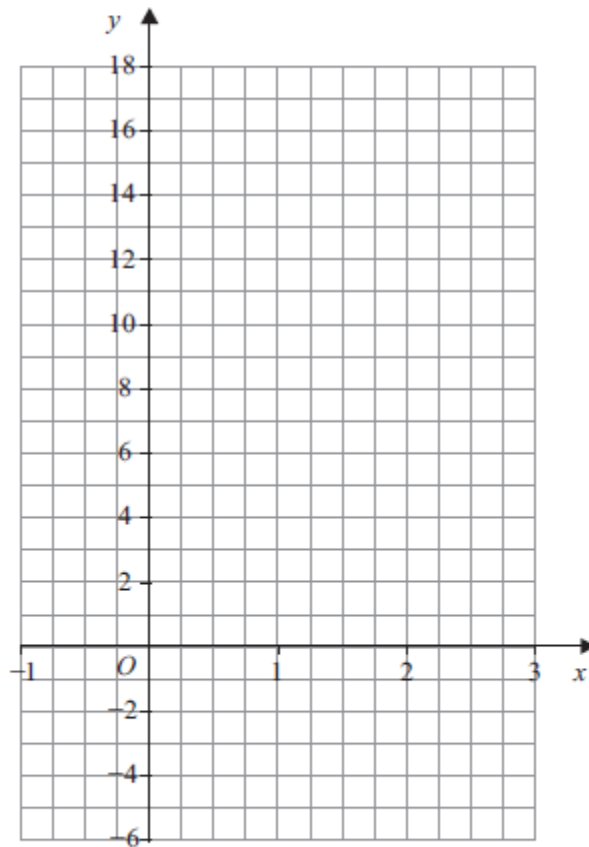(b) On the grid, draw the graph of $y = 4x + 3$

(1)
(total 3 marks)

Question 3

(a) Complete the table of values for $y = 5x + 1$

x	-1	0	1	2	3
y		1			16

(2)

(b) On the grid, draw the graph of $y = 5x + 1$

(1)

(total 3 marks)

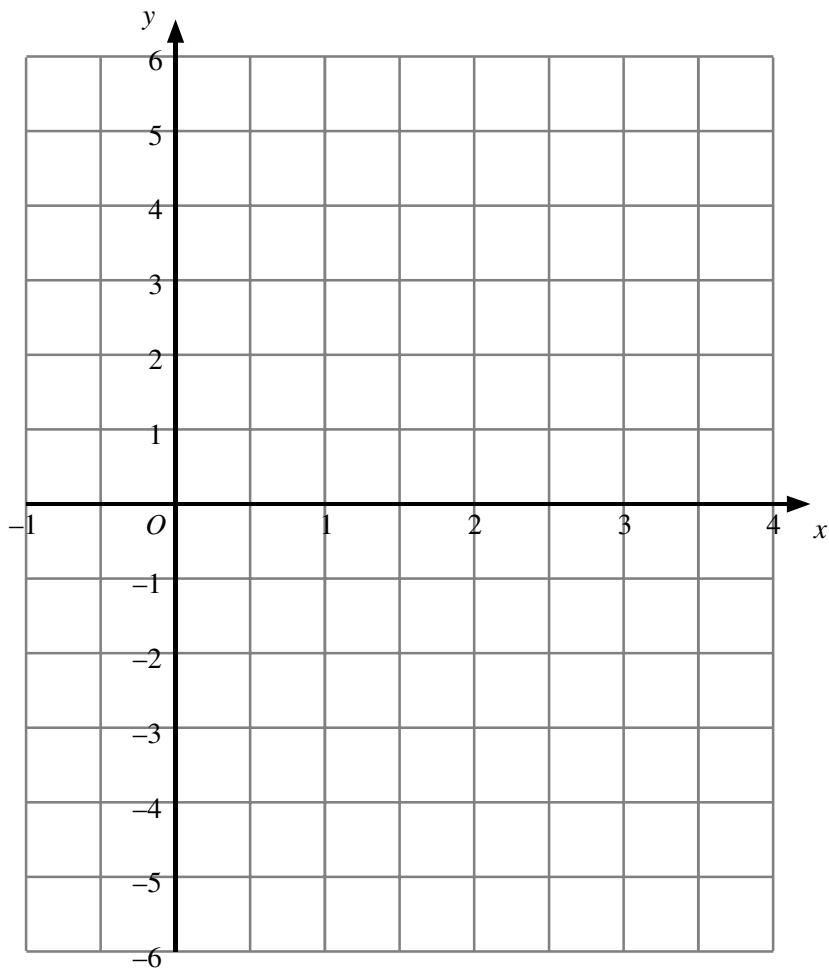# Total Mark / 10

Linear Graphs 2

Question 1

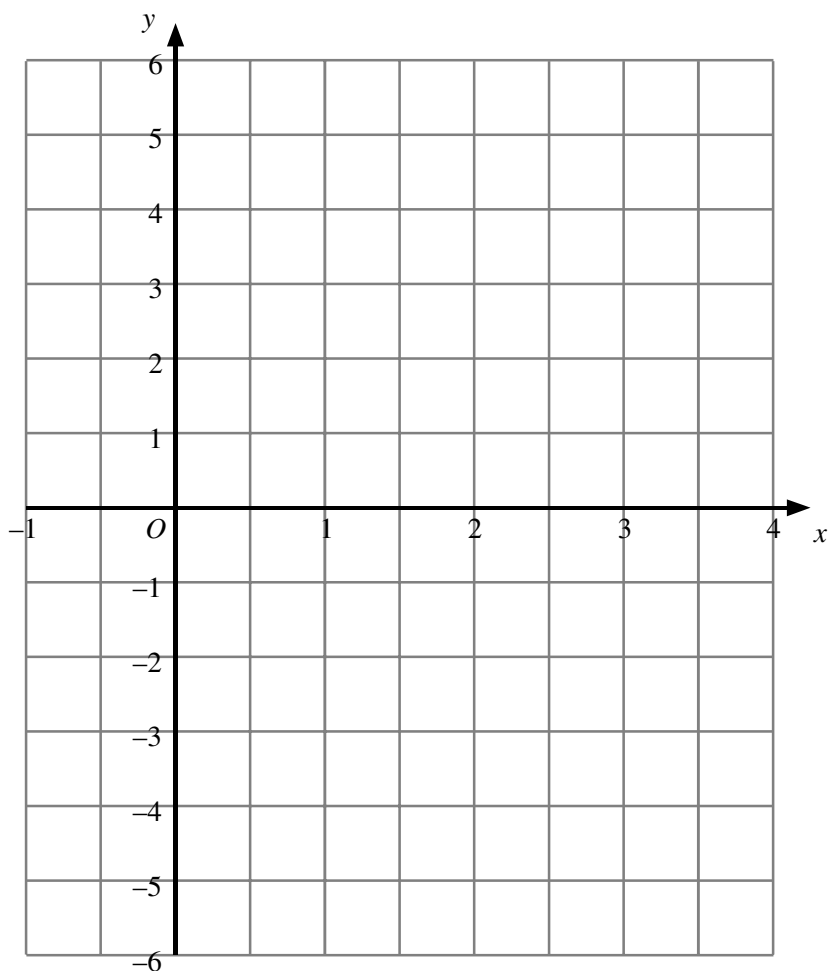**What is the equation of the line below?**
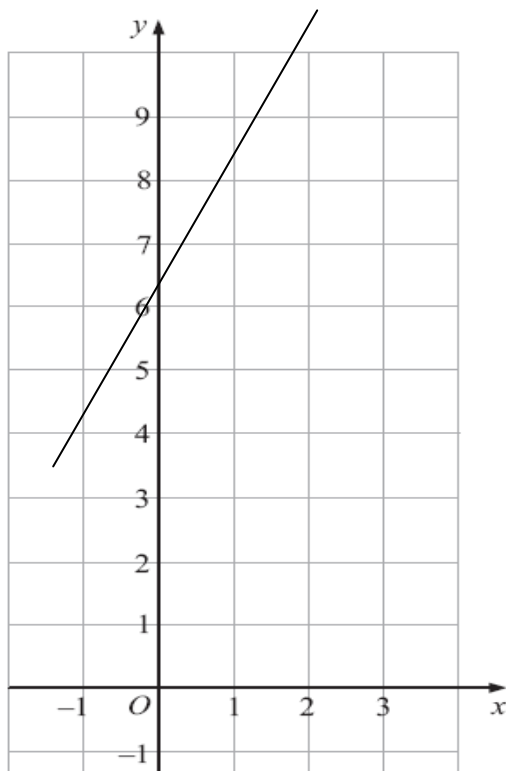
y = ………………………

(4).

Question 2

(a) On the grid,

    (i)   draw the line $x = 3$

    (ii) draw the line $y = -1$

    (iii) draw the line $y = x$

(3)

Linear Graphs 2 PiXL Resource

(b)   On the grid, draw the graph of $y = 2x - 3$

(3)

(Total 6 marks)

_____

____

Total Mark / 10

Multiplication with a single bracket 1

Question 1

Expand

$$2(3c - 2)$$

....

(1)

Question 2

Expand $5(x + 2)$

....

(1)

Question 3

Expand and simplify $4(2x + 5) + 2(3x - 2)$

....

(2)

Question 4

Expand $3y(y + 4)$

....
(2)

Question 5

Expand $\quad 2y(2y - 4)$

....
(2)

Question 6

Expand $\quad 4(3a - 7)$

....
(2)

Total Mark / 10

Multiplication with a single bracket 2

Question 1

Expand and simplify $2(3y + 5)$

....

(2)

Question 2

Multiply out $5(w + 6)$

....

(2)

Question 3

Expand and simplify $4(x - 3) - 2(1 - x)$

....

(3)

Question 4

(a) Expand $3(4x + y)$

(2)

....

(b) Expand $5p(p - 3)$

(1)

....

Total Mark / 10

Percentage of a quantity 1

Question 1

Sam bought a car for £700
He sold the car for a 20% profit.

Work out how much Sam sold his car for.

£ ....

(Total 3 marks)

Question 2

Jackie orders a new washing machine.
The washing machine costs £350
Jackie pays a deposit of 20% of the cost.

Work out how much deposit Jackie pays.

£ ....

(total 3 marks)

Question 3

(a) Work out 50% of £640

£ ....

(2)

(b) Work out 10% of £56

£ ....

(2)

(Total 4 marks)

Total Mark / 10

Percentage of a quantity 2

Question 1

Angela earns £35 240 a year.

She has to pay income tax.

She is allowed to earn £6475 before paying tax.
She pays 20% tax on the rest.

Her employer deducts the income tax each month.

Work out how much income tax Angela gets deducted each month.

£ ……………………………….

(Total 5 marks)

Question 2

The table shows the membership and annual fees of a local golf club.

	Full members	Weekday members	Lady members	Junior members
Number of members	243	64	77	36
Annual Fee	£600	£300	£250	£120

The club needs to raise £7200 to refurbish the clubhouse next year.

In the committee meeting, the club Captain suggests that the fee for each full member next year should be increased by 5%.
The club President says that next year each member should pay an extra £18

Which is the better suggestion?
You must show all your working.

(total 5 marks)

Total Mark / 10