Exam Practice questions

4 (a) Expand $3(2 + t)$

   (b) Expand $3x(2x + 5)$

   (c) Expand and simplify $(m + 3)(m + 10)$

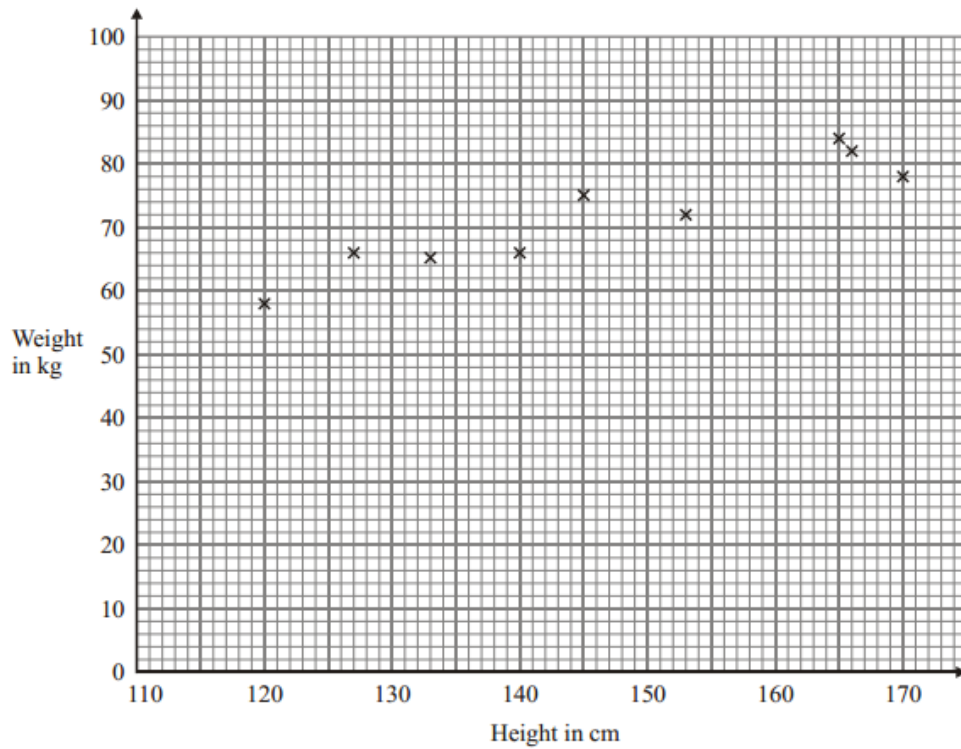4. (a)   Expand $4(3x + 5)$

....
                                                            (1)

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

....
                                                            (2)
                                                    (3 marks)

**4.** The scatter graph shows information about the height and the weight for nine students.

Height in cm

The table shows the height and the weight for three more students.

Height in cm	135	155	170
Weight in kg	70	75	85

(a) On the scatter graph, plot the information from the table.

(1)

(b) What type of correlation does this scatter graph show?

....

(1)

(c) The weight of another student is 80 kg.

Estimate the height of this student.

....cm

(2)

(4 marks)

The scatter graph shows some information about 8 cars.
For each car it shows the engine size, in litres, and the distance, in kilometres, the car travels on one litre of petrol.
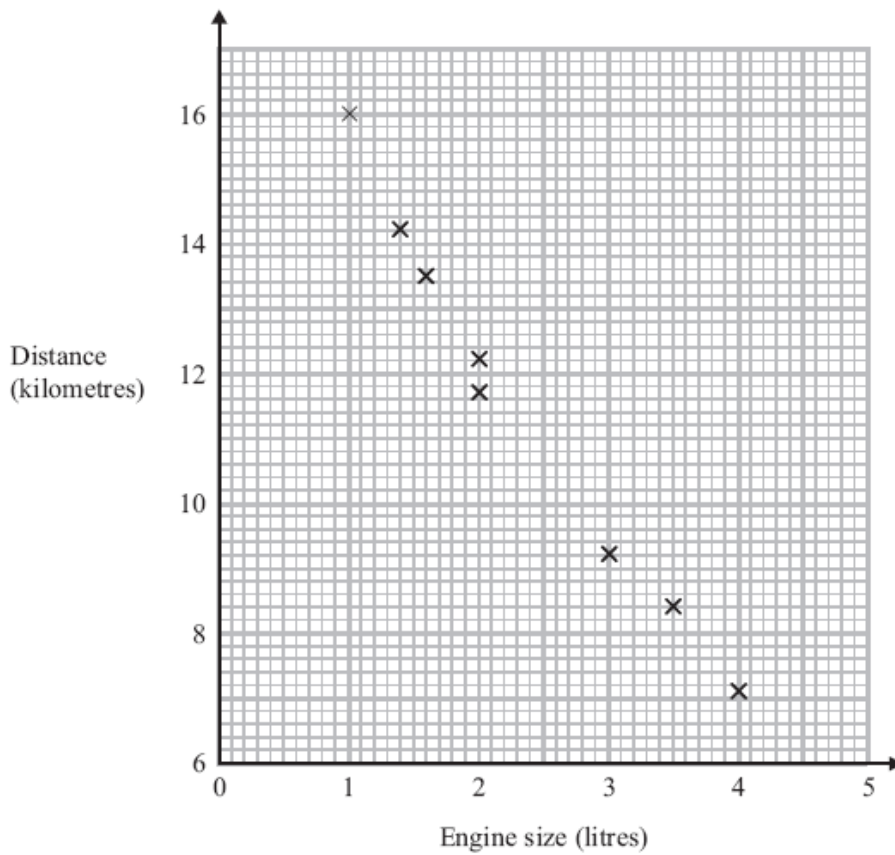
(a) What type of correlation does the scatter graph show?

....

(1)

A different car of the same type has an engine size of 2.5 litres.

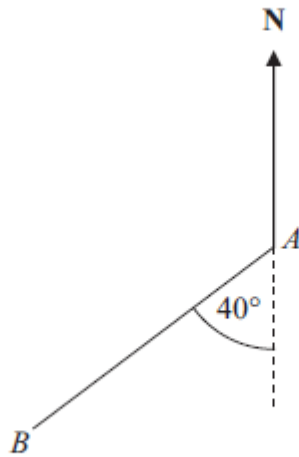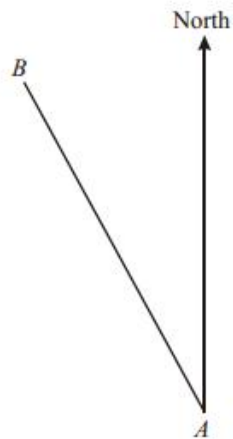(b) Estimate the distance travelled on one litre of petrol by this car.

1.

N

A

40°

B

Diagram **NOT**
accurately drawn

Work out the bearing of *B* from *A*.

3.

North

B

A

(a) Measure and write down the bearing of *B* from *A*.

..........................°
(1)

(b) On the diagram, draw a line on a bearing of 107° from *A*.

(1)
(2 marks)

3. Pradeep wants to find out how much time people spend playing sport.
He uses this question on a questionnaire.

> How much time do you spend playing sport?
>
> ☐   ☐   ☐
>
> 0 – 1 hours   1 – 2 hours   3 – 4 hours

(a) Write down **two** things wrong with this question.

1...

....

2..

....

(2)

(b) Design a better question for Pradeep's questionnaire to find out how much time people spend playing sport.

5. Write down the value of

(i) 5^0

....

(ii) 4^{-2}

....

(iii) $100^{\frac{1}{2}}$

....

(Total 3 marks)

6. (a) Write down the value of

(i) 9^0

....

(ii) $169^{\frac{1}{2}}$

....

(2)

(b) Work out $64^{\frac{2}{3}}$

....

(2)

(Total 4 marks)

1. A piece of wood is of length 45 cm.
   The length is divided in the ratio 7 : 2

   Work out the length of each part.

6. A shop sells CDs and DVDs.
   In one week the number of CDs sold and the number of DVDs sold were in the ratio 3:5
   The total number of CDs and DVDs sold in the week was 728

   Work out the number of CDs sold.

4. The size of each exterior angle of a regular polygon is 40°.

   Work out the number of sides of the regular polygon.

   ....
   (2 marks)

5. The size of each interior angle of a regular polygon is 156°.
   Work out the number of sides of the polygon.

   ....
   (3 marks)

5. Which is the best estimate for the value of

$$\frac{38.3 \times 51.7}{2.1}$$

8. Work out an estimate for the value of

$$\frac{5.79 \times 312}{0.523}$$

1. Here is a list of ingredients for making **10** Flapjacks.

Ingredients for 10 Flapjacks
80 g rolled oats
60 g butter
30 ml golden syrup
36 g light brown sugar

Work out the amount of each ingredient needed to make **15** Flapjacks.

*3. Henry is thinking about having a water meter.

These are the two ways he can pay for the water he uses.

┌───┐   ┌─────────────────────────────┐
│   **Water Meter**   │   │   **No Water Meter**   │
│   │   │   │
│   A charge of £28.20 per year   │   │ A charge of £107 per year │
│   │   └─────────────────────────────┘
│   **plus**   │
│   │
│ 91.22p for every cubic metre of water used │
│   │
│ **1 cubic metre = 1000 litres**   │
└───┘

Henry uses an average of 180 litres of water each day.

Henry wants to pay as little as possible for the water he uses.
Should Henry have a water meter?

2. Fred has a recipe for 30 biscuits.

Here is a list of ingredients for 30 biscuits.

Self-raising flour   : 230g
Butter   : 150g
Caster sugar   : 100g
Eggs   : 2

Fred wants to make 45 biscuits.

(a) Complete his new list of ingredients for 45 biscuits.

Self-raising flour   :.....................

Butter   : ....

Caster sugar   : ....

Eggs   : ....

(3)

Gill has only 1 kilogram of self-raising flour. She has plenty of the other ingredients.

(b) Work out the maximum number of biscuits that Gill could bake.

*4. Here is part of Gary's electricity bill.

> **Electricity bill**
>
> New reading   7155 units
> Old reading   7095 units
>
> Price per unit 15p

Work out how much Gary has to pay for the units of electricity he used.
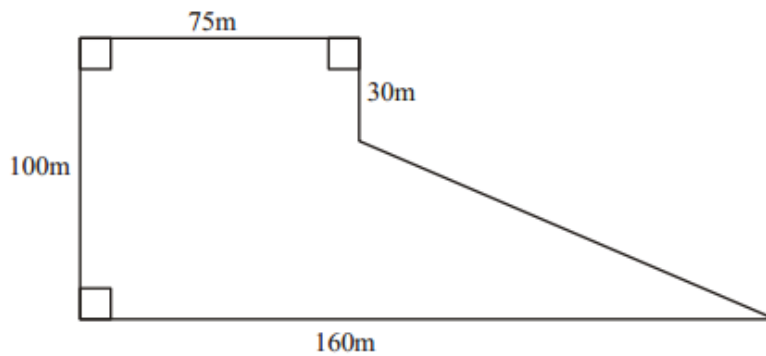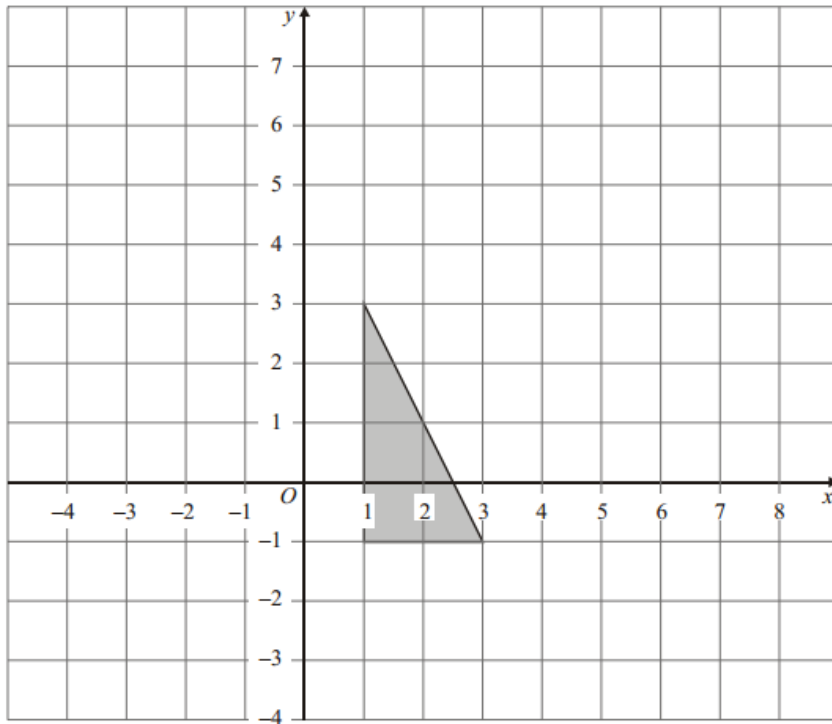
9.

Diagram **NOT** accurately drawn

The diagram shows the plan of a field.
The farmer sells the field for £3 per square metre.

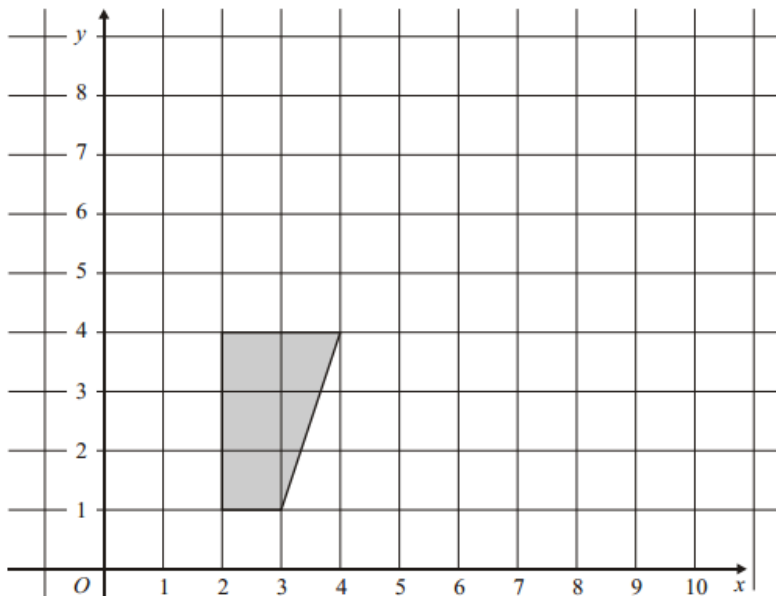Work out the total amount of money the farmer should get.

3.

Enlarge the shaded triangle by a scale factor 2, centre 0.

(Total 3 marks)

5.

On the grid, enlarge the shaded shape by scale factor of 2, centre (1,1).
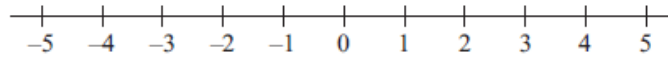
(Total 3 marks)

1. $-1 \leq n < 4$

n is an integer.

Write down all the possible values of n.

....
(2 marks)

2. (a) $x > -3$

Show this inequality on the number line.

```
+   +   +   +   +   +   +   +   +   +   +
-5  -4  -3  -2  -1  0   1   2   3   4   5
```

(2)

(b) Solve the inequality $7y - 34 \leq 8$

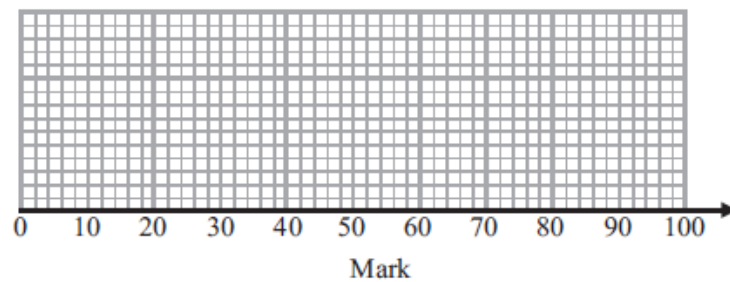**1.** All the students in Mathstown school had a test.

The lowest mark was 18
The highest mark was 86
The median was 57
The lower quartile was 32
The interquartile range was 38

On the grid, draw a box plot to show this information.

```
0   10  20  30  40  50  60  70  80  90  100
```
Mark

4. Harry grows tomatoes.
This year he put his tomato plants into two groups, group A and group B.

Harry gave fertiliser to the tomato plants in group A.
He did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group A.
The cumulative frequency graph shows some information about these weights.
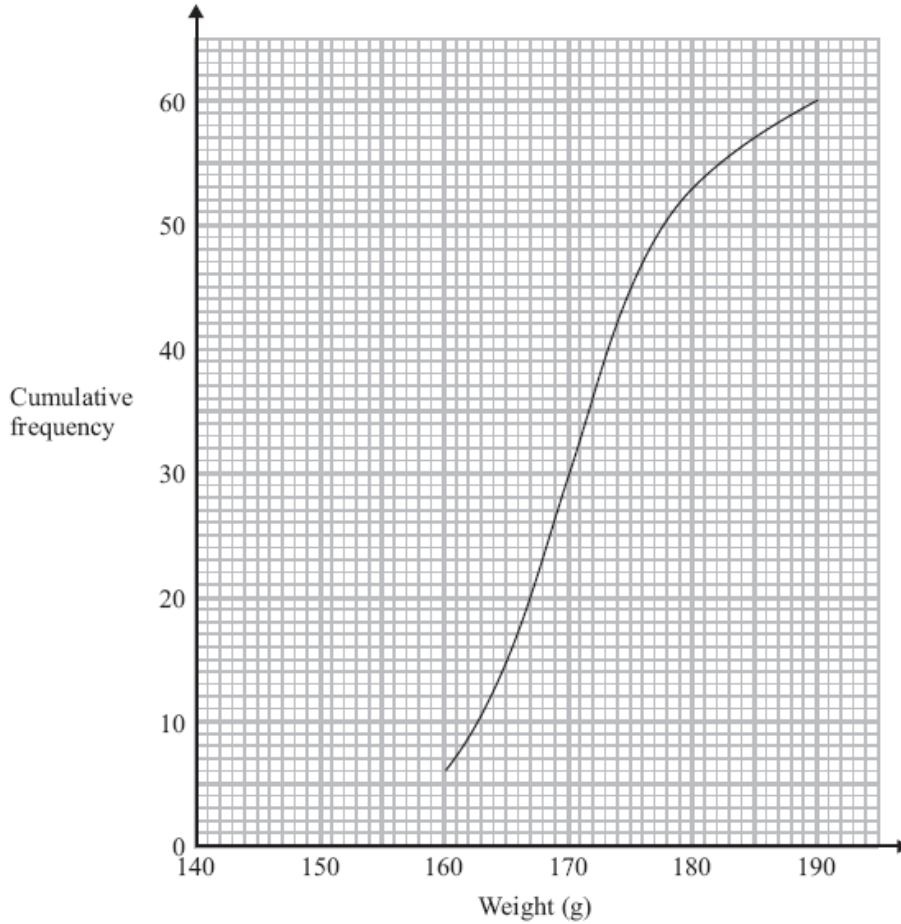
(a) Use the graph to find an estimate for the median weight.

.... g

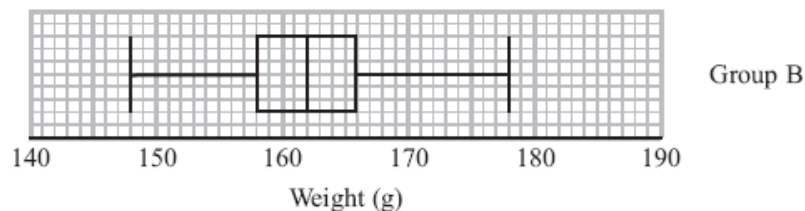The 60 tomatoes from group A
had a minimum weight of 153 grams
and a maximum weight of 186 grams.

(b) Use this information and the cumulative frequency graph to draw a box plot for the 60 tomatoes from group A.

Group A

| 140 | 150 | 160 | 170 | 180 | 190 |
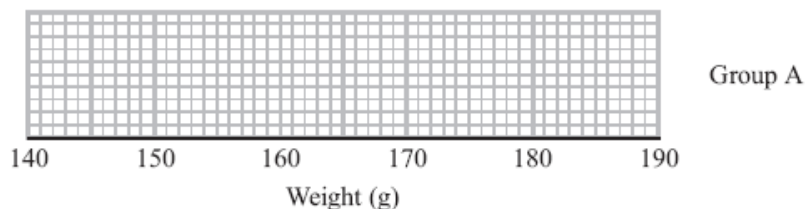
Weight (g)

(3)

Harry did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group B.
He drew this box plot for his results.

Group B

| 140 | 150 | 160 | 170 | 180 | 190 |

Weight (g)

(c) Compare the distribution of the weights of the tomatoes from group A with the distribution of the weights of the tomatoes from group B.

....

....

1. (a) Write the number 0.00037 in standard form.

(1)

....

(b) Write 8.25×10^3 as an ordinary number.

(1)

....

(c) Work out $(2.1 \times 10^8) \times (6 \times 10^{-5})$.
Write your answer in standard form.

11. (a) Write 5.7×10^{-4} as an ordinary number.

....

(1)

(b) Work out the value of $(7 \times 10^4) \times (3 \times 10^5)$

Give your answer in standard form.

....

(2)

(3 marks)

1. Solve the simultaneous equations

$$3x + 2y = 4$$
$$4x + 5y = 17$$

4. Solve the simultaneous equations

$$5x + 2y = 11$$
$$4x - 3y = 18$$

3. The radius of a circle is 3.60 m.

Work out the area of the circle.
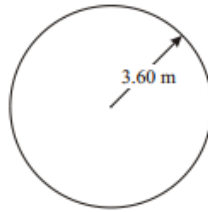Give your answer correct to 3 significant figures.

Diagram **NOT**
accurately drawn

3.60 m

....
(3 marks)

4. The diameter of a wheel on Harry's bicycle is 0.65 m.

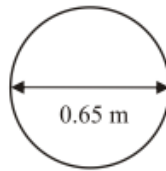Calculate the circumference of the wheel.
Give your answer correct to 2 decimal places.

0.65 m

Diagram **NOT**
accurately drawn

....