

**Pre Public Examination**  
**November 2016**  
GCSE Mathematics (AQA style)

Foundation Tier  
**Paper 3F**

Name .....

Class .....

**TIME ALLOWED**

1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**

- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- You are permitted to use a calculator in this paper.
- Do all rough work in this book.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question on the Question Paper.
- **You are reminded of the need for clear presentation in your answers.**
- The total number of marks for this paper is **80**.

© The PiXL Club Limited 2016

This resource is strictly for the use of member schools for as long as they remain members of The PiXL Club. It may not be copied, sold nor transferred to a third party or used by the school after membership ceases. Until such time it may be freely used within the member school. All opinions and contributions are those of the authors. The contents of this resource are not connected with nor endorsed by any other company, organisation or institution.

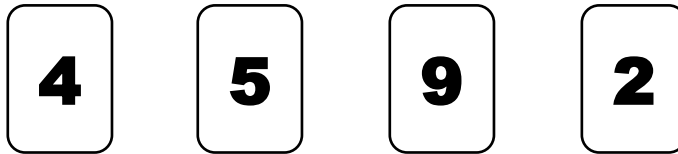
Question	Mark	Out of
1		3
2		3
3		4
4		5
5		3
6		2
7		3
8		4
9		5
10		3
11		2
12		3
13		3
14		3
15		7
16		3
17		2
18		3
19		2
20		6
21		6
22		5
<b>Total</b>		<b>80</b>

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**

Answer **all** questions in the spaces provided

1 Here are four number cards



1 (a) Arrange all four digits on the cards so that they make a multiple of 5.

[1 mark]

---

---

Answer \_\_\_\_\_

1 (b) Choose three of the digits on the cards to make a multiple of 3.

[1 mark]

---

---

Answer \_\_\_\_\_

1 (c) Choose two of the cards to make a square number with two digits.

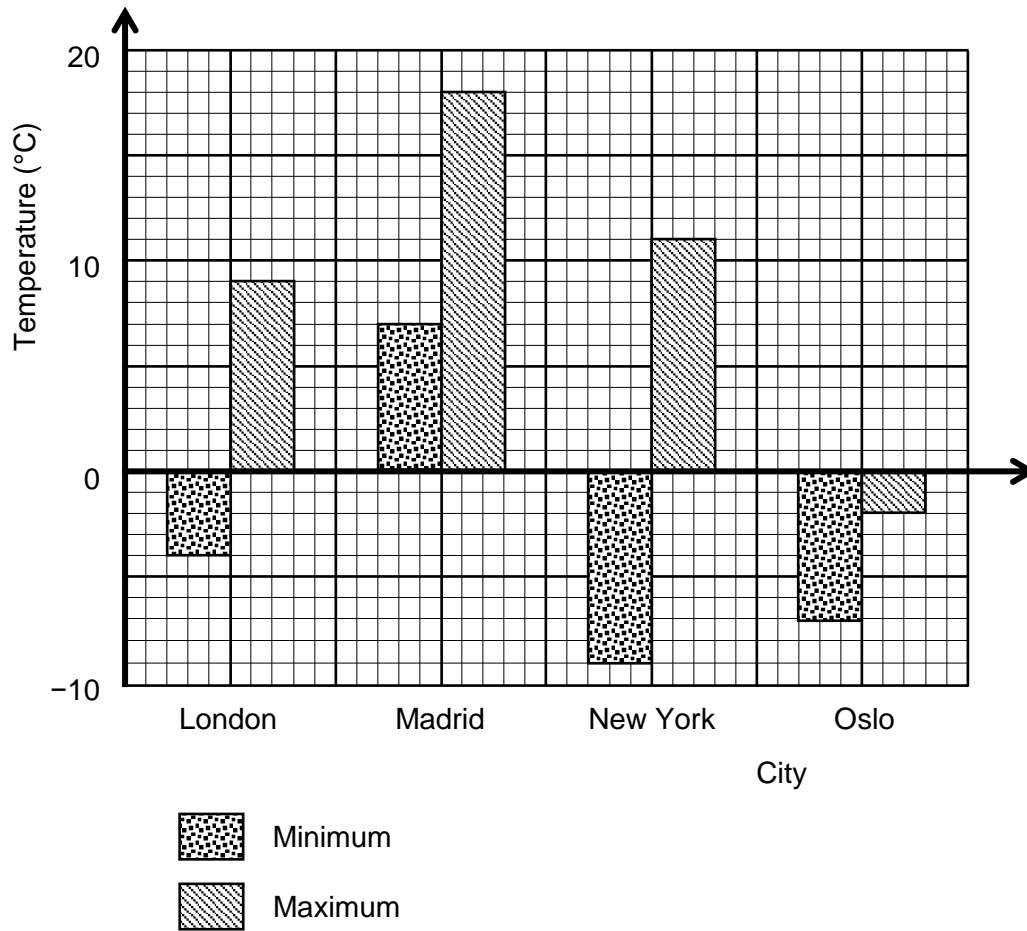
[1 mark]

---

---

Answer \_\_\_\_\_

2 The dual bar chart shows the minimum and maximum temperatures in some cities in November.



2 (a) What is the **minimum** temperature in Oslo in November?

[1 mark]

---

Answer \_\_\_\_\_ °C

2 (b) What is the difference between the maximum and minimum temperatures in London in November?

[1 mark]

---

Answer \_\_\_\_\_ °C

**2 (c)** In which city is there the greatest difference between the maximum and minimum temperatures?

Tick a box

London

Madrid

New York

Oslo

**[1 mark]**

**3 (a)** Simplify  $2m - 3n + 5m + n$ .

**[1 mark]**

---

---

Answer \_\_\_\_\_

**3 (b)** Give  $x^{12} \div x^3$  as a single power of  $x$ .

**[1 mark]**

---

---

Answer \_\_\_\_\_

**3 (c)** Factorise fully  $6y - 2y^2$ .

**[2 marks]**

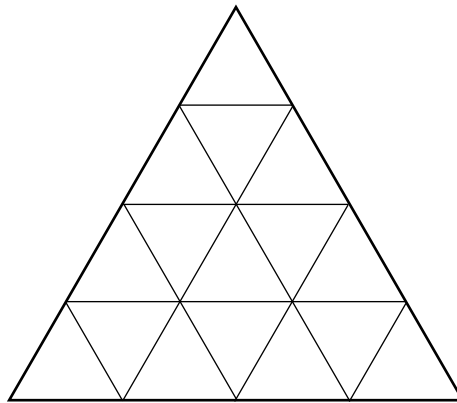
---

---

---

Answer \_\_\_\_\_

4 This shape is made up of triangles, all of which have three equal sides.



4 (a) What is the name for this type of triangle?

Tick a box

equilateral

isosceles

right-angled

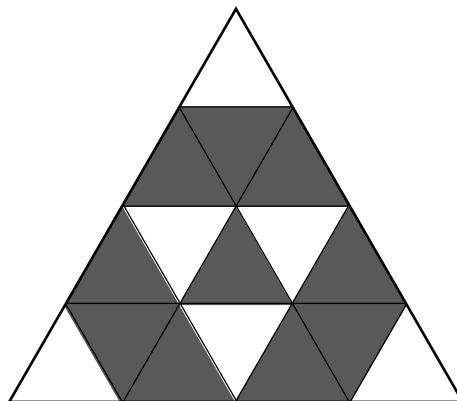
scalene

[1 mark]

4 (b) What fraction of the shape is shaded?

Give your answer in its simplest form.

[2 marks]

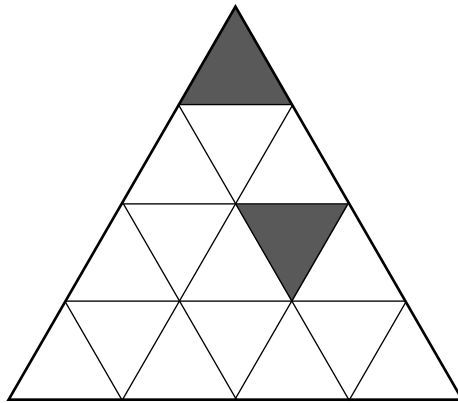


---

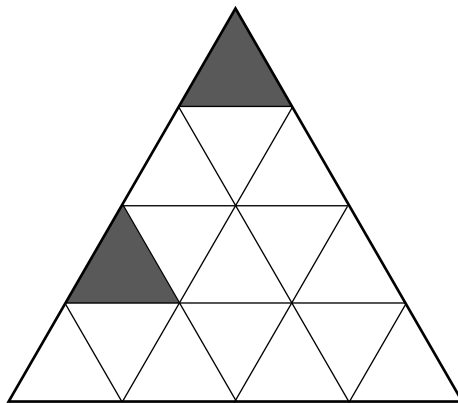
---

Answer \_\_\_\_\_

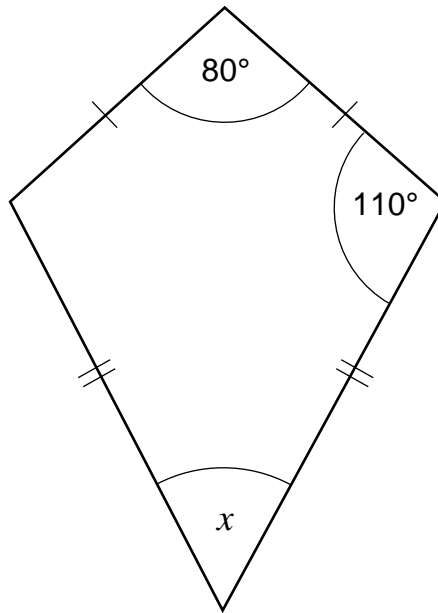
4 (c) Shade in five more small triangles so that this shape has three lines of symmetry. [1 mark]



4 (d) Shade in five more small triangles so that this shape has rotational symmetry of order three. [1 mark]



- 5 Here is a quadrilateral.  
It has one line of symmetry.



- 5 (a) What is the name of the shape?

Tick a box

kite

parallelogram

rhombus

trapezium

[1 mark]

- 5 (b) Find the size of the angle marked  $x$ .

You **must** show your working, which may be on the diagram.

[2 marks]

---

---

---

---

---

Answer \_\_\_\_\_ °



6 Use your calculator to find the value of

$$\sqrt{2.8^2 + 4.5^2}$$

[2 marks]

---

---

---

---

Answer \_\_\_\_\_

7 At a fun fair, the total cost of admission for two adults and one child is £28  
The total cost for two adults and four children is £43.

Find the cost of admission for one adult and one child.

Show all your working out.  
You must **not** use a trial and improvement method.

[3 marks]

---

---

---

---

---

---

---

---

---

---

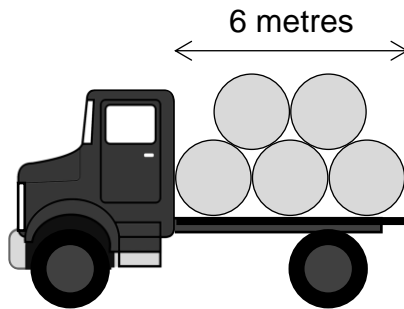
Answer £ \_\_\_\_\_

8 A hire company has three sizes of lorry that can be used to move large drums.

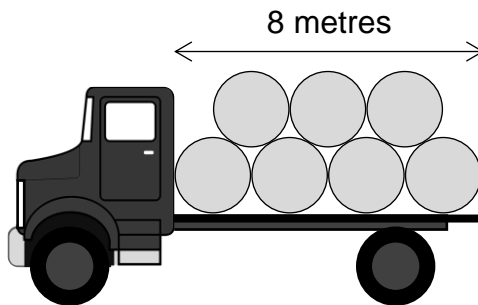
The diameter of each drum is 2 metres.

Two rows of drums can be loaded on a lorry, as shown in the first two pictures.

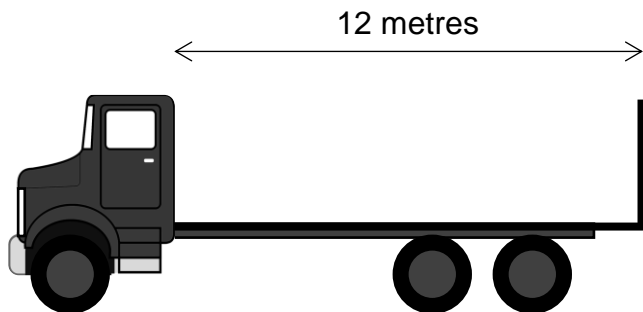
The load space of a small lorry is 6 metres long. It can carry 5 drums.



The load space of a medium lorry is 8 metres long. It can carry 7 drums.



The load space of a large lorry is 12 metres long.



I want to move 120 drums.  
I will use large lorries.  
One lorry may not be completely full.  
How many large lorries will I need?

[4 marks]

---

---

---

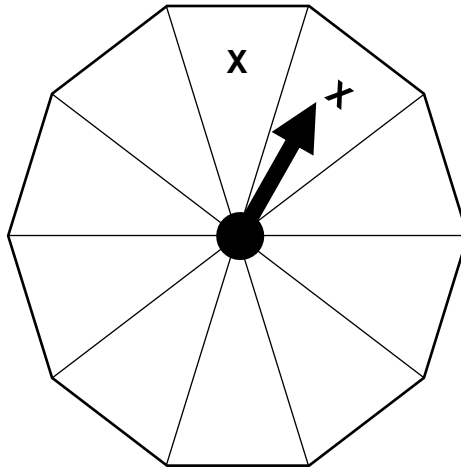
---

---

Answer \_\_\_\_\_

9 Each section of this spinner is equally likely to be selected.

Two of the sections are labelled X.



The remaining sections are each labelled Y and Z.  
It is more likely that the spinner will land on Y than on X.  
It is more likely that the spinner will land on Z than on Y.

9 (a) Label the other parts of the spinner.

[2 marks]

9 (b) Which word best describes the probability that the spinner will land on Z?

Tick a box

certain

evens

likely

unlikely

[1 mark]

9 (c) To win a game, Andre must spin either a Y or a Z.

What is the probability that Andre wins the game when the spinner is spun?

[2 marks]

---

---

---

Answer \_\_\_\_\_

**10** There are 240 cars on sale at a garage.

Of these, 45% have been test driven by customers.

$\frac{3}{8}$  of the cars are reserved for customers.

The remaining cars have not yet had any customers interested.

Find the percentage of the cars that have not yet had any customers interested.

**[3 marks]**

---

---

---

---

---

Answer \_\_\_\_\_

**11** Solve  $7x + 2 = 9x - 3$ .

**[2 marks]**

---

---

---

Answer \_\_\_\_\_

12 Norman needs to hire a taxi to take him 30 miles back home.



He sees these two offers.

**Cleo's Cabs**  
Fixed charge  
£5  
plus  
80p per mile

**Jake's Taxis**  
No fixed  
charge  
£1 per mile

Which of these offers is cheapest for Norman?

Tick a box:

- Cleo's Cabs will be cheaper than Jake's Taxis.
- Jake's Taxis will be cheaper than Cleo's Cabs.
- Cleo's Cabs and Jake's Taxis will cost the same.

You **must** show your working out.

**[3 marks]**

---

---

---

---

---

---

---

13 Divide £450 in the ratio 5 : 3 : 2 .

[3 marks]

---

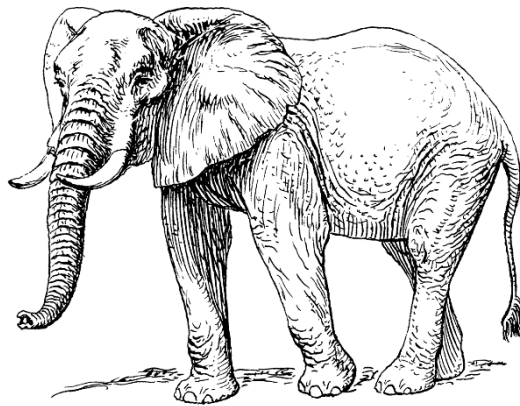
---

---

---

Answer £ \_\_\_\_\_ : £ \_\_\_\_\_ : £ \_\_\_\_\_

14



Fifty years ago, it was estimated that the population of elephants in Africa was 1.2 million.

Since then, the population has fallen by 65%.

Estimate the current population of elephants in Africa.

[3 marks]

---

---

---

---

---

Answer \_\_\_\_\_

15 Each wheel on Laura's bicycle has a diameter of 70cm.



15 (a) Laura uses her calculator to work out the circumference of the wheel. She says that the exact circumference of the wheel is 219.91149 cm.

Is she correct?

Tick a box.

Yes

No

Give a reason for your answer.

[2 marks]

---

---

15 (b) Laura cycles 20 miles.

Find an estimate for the number of times each wheel makes a full revolution when she does this.

You may use the fact that 5 miles = 8 kilometres.

[5 marks]

---

---

---

---

---

---

---

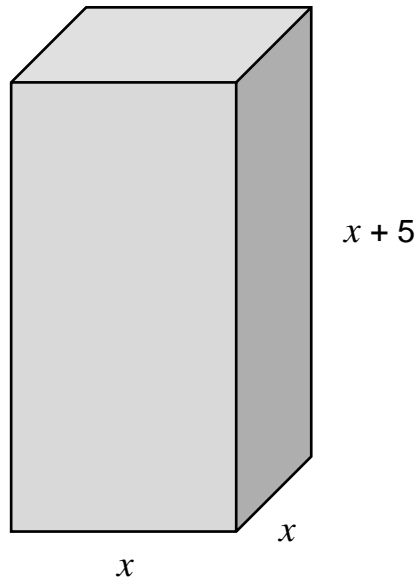
Answer \_\_\_\_\_

**16** A drinks carton is to be made in the shape of a cuboid.

It is to have a square base.

Its height is to be 5cm greater than the length of each side of its base.

The length of each side of the base is denoted  $x$ .



Not drawn accurately

Show that the formula for the volume of this cuboid is

$$V = x^3 + 5x^2.$$

Show each stage of your working out.

**[3 marks]**

---

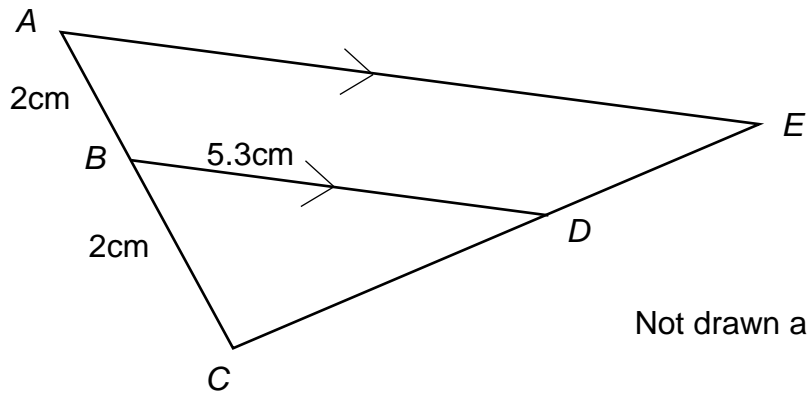
---

---

---



17



Not drawn accurately [2 marks]

In the diagram,  $AB=2\text{cm}$ ,  $BC=2\text{cm}$ ,  $BD=5.3\text{cm}$ .  
 $BD$  and  $AE$  are parallel.

Work out the length of  $AE$ .

---

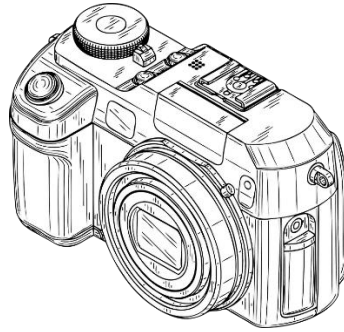
---

---

---

Answer \_\_\_\_\_

18 Darryl wants to buy a camera when he goes on holiday.



If he buys it in Spain it will cost him 140 Euros  
If he buys it in England it will cost him £115.

£1 is worth 1.24 Euros.

Is it cheaper for Darryl to buy the camera in Spain or in England?

Tick a box:

Spain

England

You **must** show your working.

**[3 marks]**

---

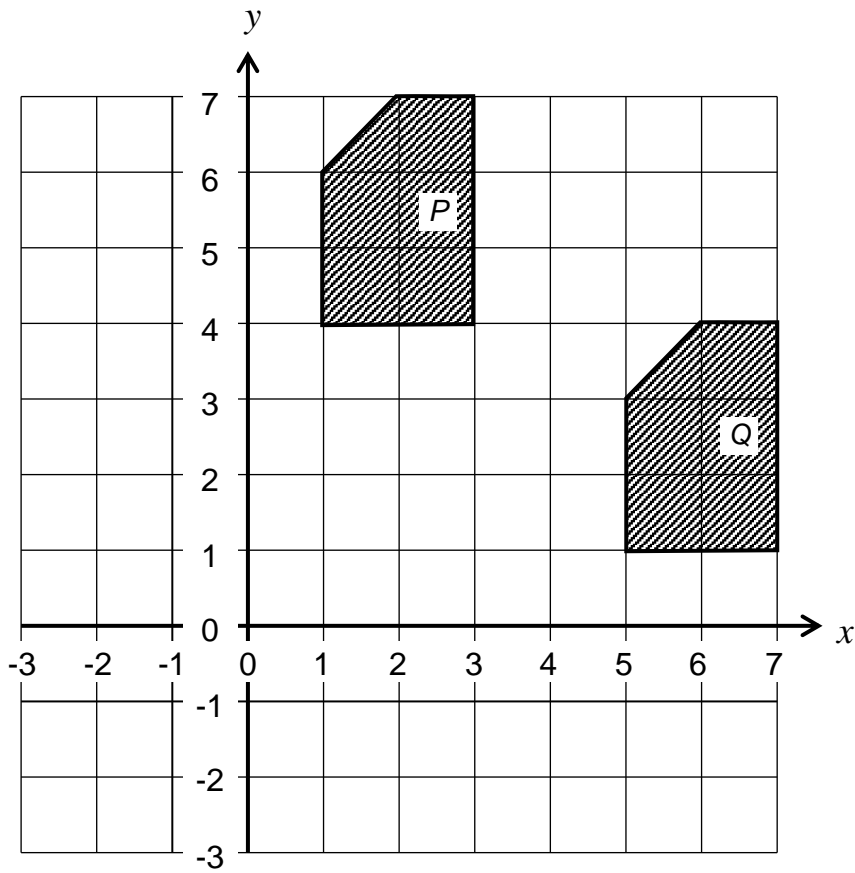
---

---

---

19 Describe **fully** the transformation that moves shape *P* to shape *Q*.

[2 marks]



---

---

---

---

---

---

---

**20** Jack plants a beanstalk.



At the end of one day, the beanstalk is 10cm high.  
Each day, it grows 6cm in height.

**20 (a)** Write down a formula for the height,  $H$ , of the beanstalk after  $n$  days.

**[2 marks]**

---

---

Answer  $H =$  \_\_\_\_\_

**20 (b)** What is the height of the beanstalk after twelve days?

**[2 marks]**

---

---

---

Answer \_\_\_\_\_ cm

**20 (c)** After how many complete days does the height of the beanstalk first exceed 2 metres?

**[2 marks]**

---

---

---

Answer \_\_\_\_\_ days

**21** A straight line passes through the points  $(0, 3)$  and  $(4, 13)$ .

**21 (a)** Calculate the gradient of the line.

**[2 marks]**

---

---

---

Answer \_\_\_\_\_

**21 (b)** What is the equation of the line?

**[2 marks]**

---

---

---

Answer \_\_\_\_\_

**21 (c)** The point  $(50, 130)$  is not on the line.

Is it above or below the line?

Tick a box:

above the line     below the line

You **must** show your working.

**[2 marks]**

---

---

---

**22** There are 350 students in year ten at a school.

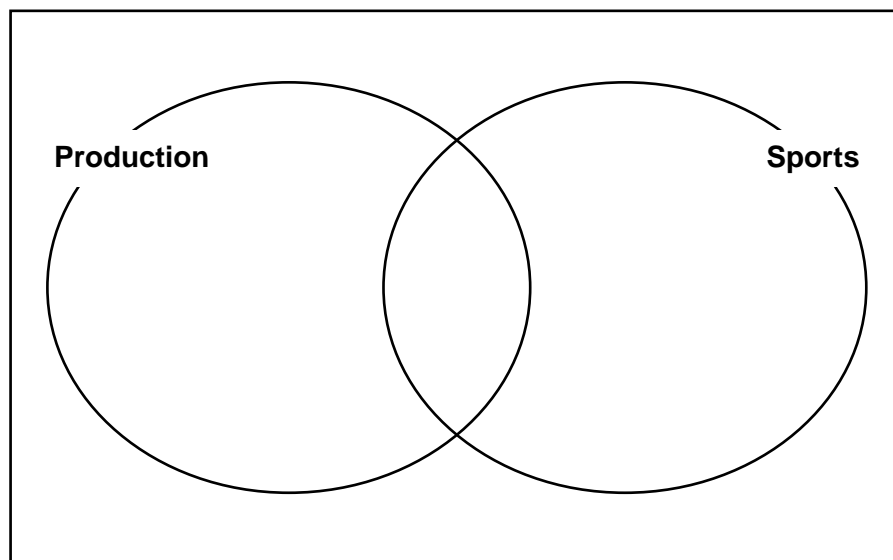
85 of these students participate in the school production.

200 of these students participate in sports teams.

70 of these students participate in both of these activities.

**22 (a)** Represent this information on the Venn diagram.

**[3 marks]**



**22 (b)** Given that a student plays sport, what is the probability that the student is also involved in the school production?

**[2 marks]**

---

---

---

Answer \_\_\_\_\_

**END OF QUESTIONS**

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**