

# Gold Level

## Question Paper 27

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Question Paper 27

**Time Allowed:** 50 minutes

**Score:** /41

**Percentage:** /100

### Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	65%	55%	45%	35%	25%	15%	<15%

1 The diagram shows a sphere and a cone.

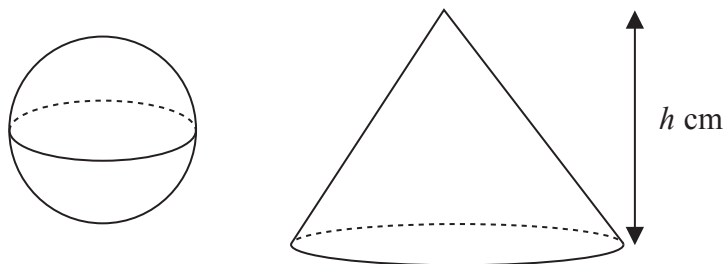


Diagram **NOT** accurately drawn

The cone has height  $h$  cm.

The radius of the base of the cone is 3 times the radius of the sphere.

Given that the volume of the sphere is equal to the volume of the cone, find an expression for the radius of the sphere in terms of  $h$ .

Give your expression in its simplest form.

2

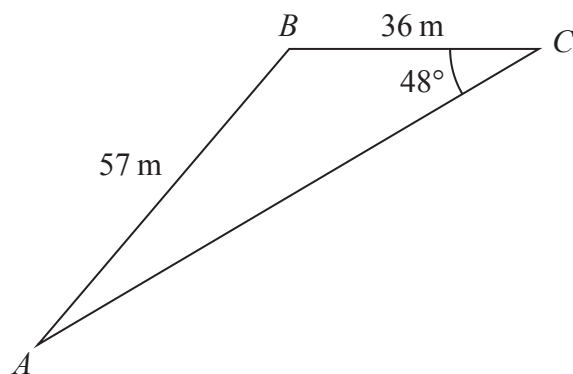


Diagram **NOT** accurately drawn

Work out the area of triangle  $ABC$ .  
Give your answer correct to 3 significant figures.

..... m<sup>2</sup>

(Total for Question 2 is 4 marks)

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3 Peter travels to work either by bus or by bike.

The probability that Peter will travel to work by bus on any one day is 0.7

Whenever Peter travels to work by bus, the probability that he will be late is 0.1

Whenever Peter travels to work by bike, the probability that he will be late is 0.05

Peter is going to go to work on Monday and on Tuesday.

Work out the probability that he will be late for work on at least one of these days.

4 The diagram shows a rectangle.

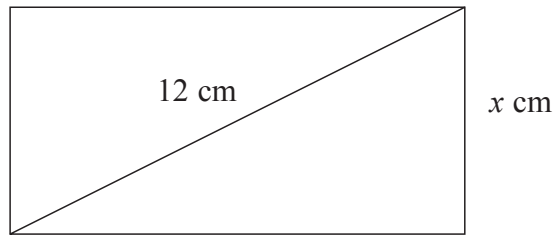


Diagram **NOT**  
accurately drawn

The width of the rectangle is  $x$  cm.

The length of a diagonal of the rectangle is 12 cm.

The perimeter of the rectangle is 28 cm.

Find the possible values of  $x$ .

Give your values correct to 3 significant figures.

Show your working clearly.

5

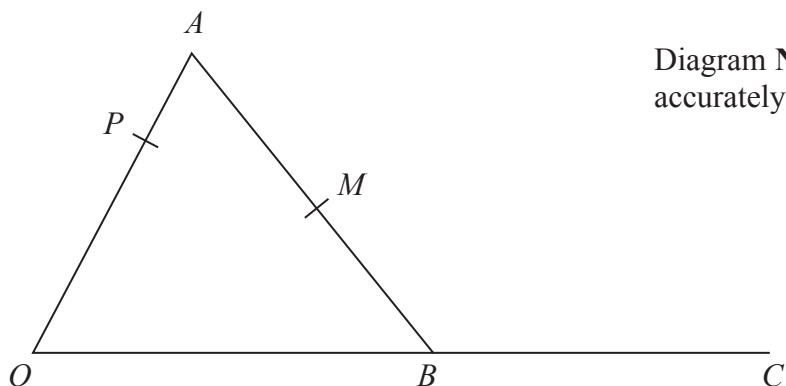


Diagram **NOT**  
accurately drawn

$OAB$  is a triangle.

$P$  is the point on  $OA$  such that  $OP:PA = 2:1$

$C$  is the point such that  $B$  is the midpoint of  $OC$ .

$M$  is the midpoint of  $AB$ .

$$\vec{OA} = 6\mathbf{a} \qquad \vec{OB} = 4\mathbf{b}$$

Show that  $PMC$  is a straight line.

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- 6 In 1981, the population of India was 683 million.  
Between 1981 and 1991, the population of India increased by 163 million.

- (a) Express 163 million as a percentage of 683 million.  
Give your answer correct to 3 significant figures.

..... %  
(2)

In 2001, the population of India was 1028 million.  
Between 2001 and 2011, the population of India increased by 17.6%

- (b) Increase 1028 million by 17.6%  
Give your answer to the nearest million.

..... million  
(3)

In 2001, the population of India was 1028 million.  
Between 1971 and 2001, the population of India increased by 87.6%

- (c) Work out the population of India in 1971.  
Give your answer correct to the nearest million.

..... million  
(3)

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(Total for Question 6 is 8 marks)

7 (a) Simplify  $\left(4h^{\frac{2}{3}}\right)^3$

.....  
(2)

$$\frac{a\sqrt{a}}{\sqrt[3]{a^2}} = a^k$$

(b) Work out the value of  $k$ .

$k =$  .....  
(3)

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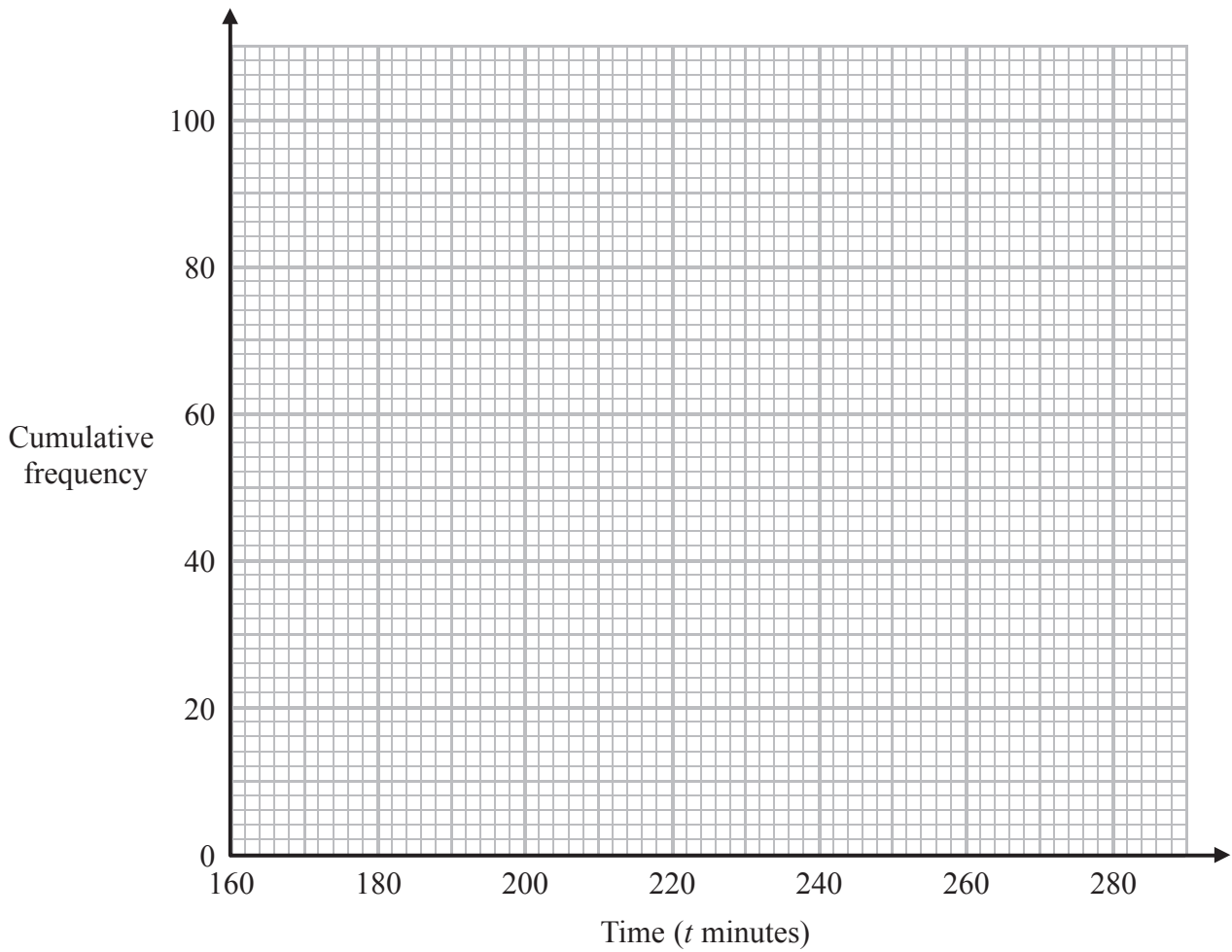
(Total for Question 7 is 5 marks)

8 The cumulative frequency table shows information about the times taken by 92 runners to complete a marathon.

Time ( $t$ minutes)	Cumulative frequency
$160 < t \leq 180$	9
$160 < t \leq 200$	35
$160 < t \leq 220$	68
$160 < t \leq 240$	80
$160 < t \leq 260$	89
$160 < t \leq 280$	92



(a) On the grid, draw a cumulative frequency graph for the information in the table.



(2)

(b) Use the graph to find an estimate for the number of runners who took more than 230 minutes to complete the marathon.

(2)

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(Total for Question 8 is 4 marks)