Practice Paper G Answers

Paper 1

1. Evaluate $\frac{2}{5} \div 1\frac{1}{10}$. **2**

$\frac{4}{11}$

2. Factorise fully $2m^2 - 18$. **2**

$2(m+3)(m-3)$

3. Given that $f(x) = 5 - x^2$, evaluate $f(-3)$. **2**

$f(-3) = -4$

4. Solve the equation $3x + 1 = \frac{x-5}{2}$ **3**

$x = -\frac{7}{5}$

5. Express $\sqrt{63} + \sqrt{28} - \sqrt{7}$ as a surd in its simplest form. **3**

$4\sqrt{7}$

6. Solve $x^2 - 3x - 10 = 0$ **3**

$x = -2, x = 5$

7. Alan is taking part in a quiz. He is awarded x points for each correct answer and y points for each wrong answer. During the quiz, Alan gets 24 questions correct and 6 wrong. He scores 60 points.

a) Write down an equation in x and y which satisfies the above condition. **1**

$24x - 6y = 60$

Helen also takes part in the quiz. She gets 20 questions correct and 10 wrong.
She scores 40 points.

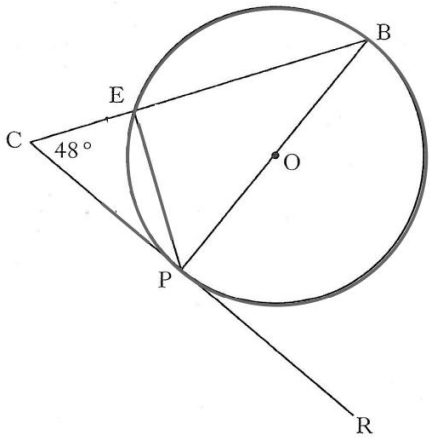
b) Write down a second equation in x and y which satisfies this condition. **1**

$20x - 10y = 40$

c) Calculate the score for David, who gets 17 correct and 13 wrong. **4**

25 points

8. A circle, centre O, is shown below.



In this circle:

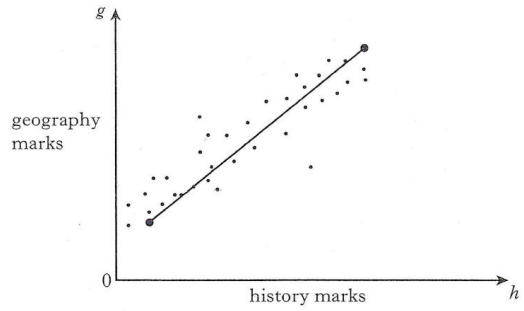
- PB is a diameter
- CR is a tangent to the circle at point P
- Angle BCP is 48°.

Calculate the size of EPR. **3**

A

138°

9. The graph below shows the relationship between the History and Geography marks of a class of students.



A best-fitting straight line AB has been drawn.

Point A represents a student who gained 12 marks for History and 20 marks for Geography.

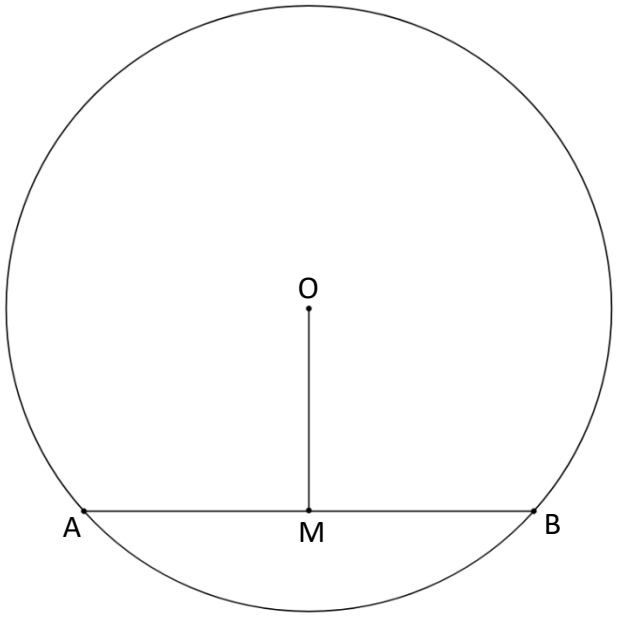
Point B represents a student who gained 92 marks for History and 80 marks for Geography.

Find the equation of the straight line AB in terms of h and g. **3**

$g = \frac{3}{4}h + 11$ or $4g = 3h + 44$

10. A circle with diameter 24cm is shown below with centre O.

- Line AB is a chord of the circle.
- Line OM is **perpendicular** to chord AB.
- The length of OM is 8 centimetres.



Calculate the length of chord AB, giving your answer in as a **simplified surd**. **4**

$8\sqrt{5}$

11. Express $\dfrac{b^{\frac{1}{2}} \times b^{\frac{5}{2}}}{b^2}$ in its simplest form. **2**

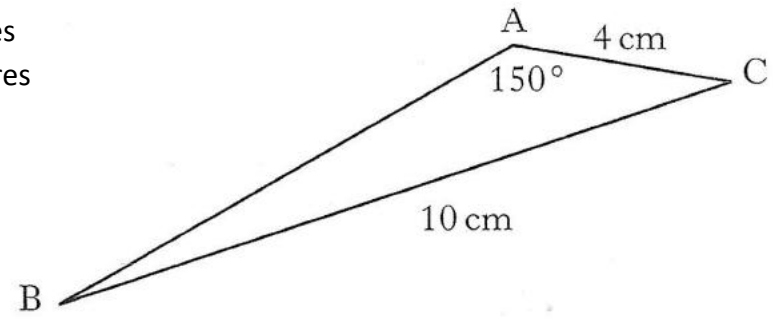
b

12. A straight line has equation $3x - 2y - 6 = 0$.
Determine the gradient of the line. **3**

$\frac{3}{2}$

13. In the triangle ABC

- AC = 4 centimetres
- BC = 10 centimetres
- Angle BAC = 150°



Given that $\sin 30° = \frac{1}{2}$, show that $\sin B = \frac{1}{5}$. **4**

$\sin B = \frac{1}{5}$ with working

Practice Paper G Answers

Paper 2

1. The value of an antique watch appreciates in value by 2.4% each year.

In 2024 it was worth £3,700.

How much will it be worth in 2028? **3**

£4068.19

2. $E = mc^2$

Find the value of E when $m = 3.6 \times 10^{-2}$ and $c = 3 \times 10^{8}$.

Give your answer in **scientific notation.** **3**

3.24×10^{15}

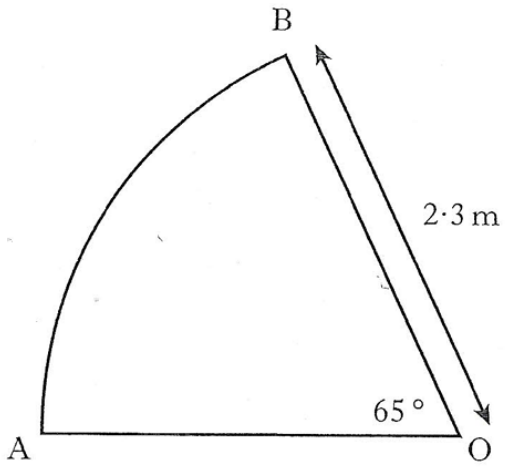
3. Expand fully and simplify $x(x-1)^2$. **2**

$x^3 - 2x^2 + x$

4. A sector of a circle, centre O, is shown below.

The radius of the circle is 2.3 metres.

Angle AOB is 65°.



Find the length of arc AB. **3**

2.61 m

5. Change the subject of the formula $p = q + 2r^3$ to r. **3**

$r = \sqrt[3]{\frac{p-q}{2}}$

6. Simplify $\frac{x^2-49}{x^2-5x-14}$ **3**

$\frac{x+7}{x+2}$

7. The marks of a group of students in their October tests are as follows:

41 56 68 59 43 37 70 58 61 47 75 66

a) Calculate the median and the interquartile range. **3**

Median = 58.5

IQR = 22

The teacher arranges extra homework classes for the students before the next test in December.

In this test, the median is 67 and the interquartile range is 14.

b) Make **two** comments comparing the marks in the October and December tests. **2**

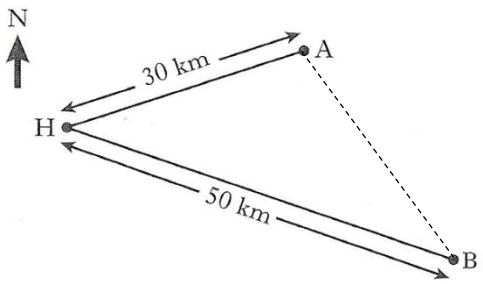
On average the marks were higher in the December test.

The marks in the October test were more varied.

8. Two yachts leave from harbour H to search for a whale after a reported sighting.

Yacht A sails for a distance of 30 kilometres and stops.

Yacht B sails for a distance of 50 kilometres and stops.

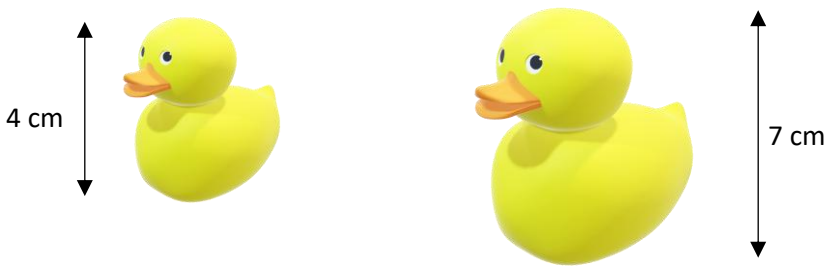


Triangle HAB, shown in the diagram, encloses an area of 360 square kilometres.

Calculate the size of angle AHB, giving your answer correct to **three significant figures**. **4**

28.7°

9. The two rubber ducks below are solid and mathematically similar.



The smaller duck has a height of 4 centimetres, and the larger duck has a height of 7 centimetres.

The smaller duck has a volume of 50 cubic centimetres.

Calculate the volume of the larger duck. **3**

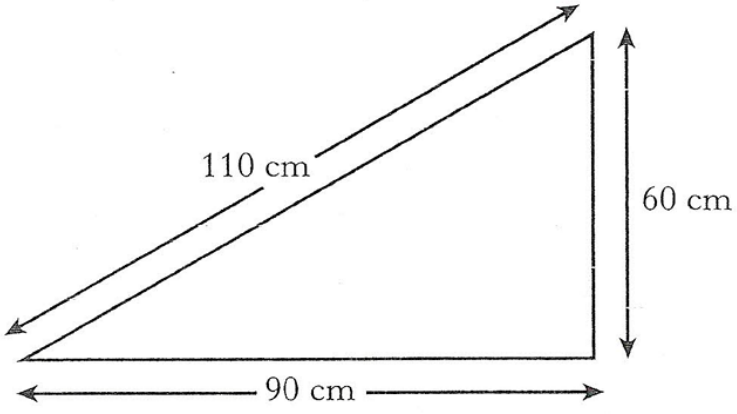
268.0 cm^3

10. After a 7% pay increase, the salary of an office worker is £38,520 per year.

Calculate the salary of the office worker before the pay increase. **3**

£36,000

11. A triangular paving slab has measurements as shown.



Is the slab in the shape of a right angle?

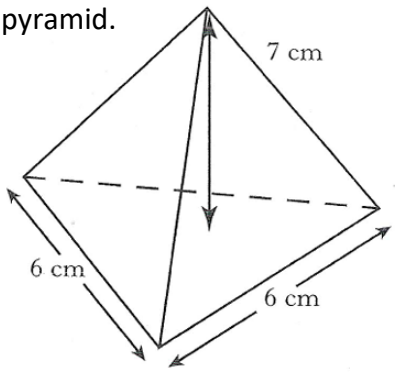
Show your working. **3**

No it is not in the shape of a right-angle, since $60^2 + 90^2 \neq 110^2$.

12. Solve $\frac{4-3x}{2} - 1 > 7$ **3**

$x < -4$ or $-4 > x$

12. The diagram below shows a pyramid.



The base of the pyramid is an **equilateral** triangle of side length 6 centimetres.

The height of the pyramid is 7 centimetres.

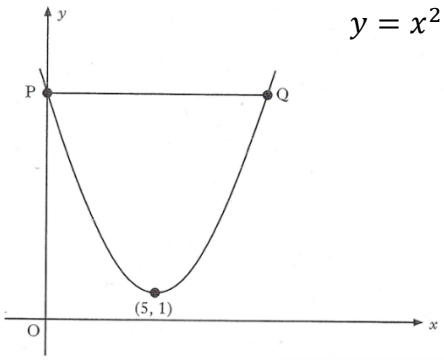
Calculate the volume of the pyramid. **4**

36.4 cm ^{3}

[Turn over

13. The graph below shows part of a parabola with the equation

$$y = x^2 - 10x + 26$$



The parabola has a minimum turning point at $(5,1)$, and line PQ is horizontal.

a) State the equation of the axis of symmetry of the parabola. **1**

$x = 5$

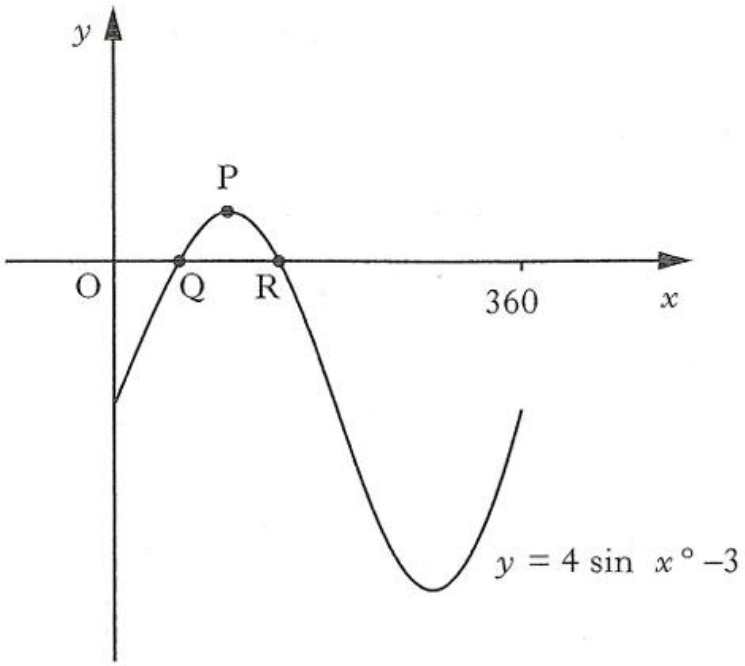
b) Determine the coordinates of the y-intercept of the parabola, P. **2**

$(0,26)$

c) Hence, or otherwise, find the coordinates of the point Q. **2**

$(10,26)$

14. Part of the graph of $y = 4\sin x° - 3$ is shown below.



The graph cuts the x-axis at the points Q and R.

P is the maximum turning point.

a) Write down the coordinates of P. **2**

$(90°, 1)$

Point Q has coordinates $(49°, 0)$, when measured to the nearest degree.

b) State the coordinates of point R. **1**

$(131°, 0)$