

- 1 Use your calculator to work out $\sqrt{\frac{3}{4}} + 2^{-1}$.
Give your answer correct to 2 decimal places.

Answer [2]

2 $y = \frac{2}{x^2} + \frac{x^2}{2}$

- Find the value of y when $x = 6$.
Give your answer as a mixed number in its simplest form.

Answer $y =$ [2]

3 Solve the equation. $\frac{n-8}{2} = 11$

Answer $n =$ [2]

3

4

$$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

Answer(a)

$$\frac{\dots \times \dots}{\dots}$$

[1]

(b) Use your answer to **part (a)** to estimate the value of p .

Answer(b) [1]

5 Write the following in order of size, smallest first.

$$0.5^2 \quad 0.5 \quad 0.5^3 \quad \sqrt[3]{0.5}$$

Answer < < < [2]

6 Carlo changed 800 euros (€) into dollars for his holiday when the exchange rate was €1 = \$1.50 .
His holiday was then cancelled.
He changed all his dollars back into euros and he received €750.

Find the new exchange rate.

Answer €1 = \$..... [3]

4

7 Make x the subject of the formula.

$$y = (x - 4)^2 + 6$$

Answer $x = \dots\dots\dots$ [3]

8 Write as a single fraction in its simplest form.

$$\frac{2}{x} - \frac{2}{x + 1}$$

Answer $\dots\dots\dots$ [3]

- 9 A bus company in Dubai has the following operating times.

Day	Starting time	Finishing time
Saturday	06 00	24 00
Sunday	06 00	24 00
Monday	06 00	24 00
Tuesday	06 00	24 00
Wednesday	06 00	24 00
Thursday	06 00	24 00
Friday	13 00	24 00

- (a) Calculate the total number of hours that the bus company operates in one week.

Answer(a) h [3]

- (b) Write the starting time on Friday in the 12-hour clock.

Answer(b) [1]

10 Factorise completely.

(a) $ax + ay + bx + by$

Answer(a) [2]

(b) $3(x - 1)^2 + (x - 1)$

Answer(b) [2]

11 A triangle has sides of length 2 cm, 8 cm and 9 cm.

Calculate the value of the largest angle in this triangle.

Answer [4]

12 $p = 4 \times 10^5$ $q = 5 \times 10^4$

Find, giving your answer in standard form,

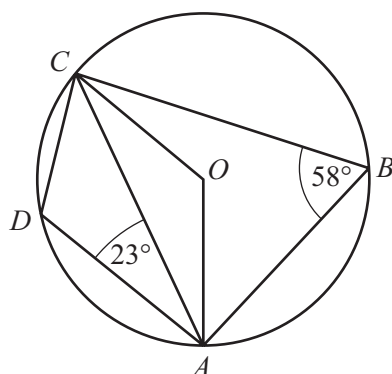
(a) pq ,

Answer(a) [2]

(b) $\frac{q}{p}$.

Answer(b) [2]

13



NOT TO
SCALE

A, B, C and D lie on a circle centre O .
Angle $ABC = 58^\circ$ and angle $CAD = 23^\circ$.

Calculate

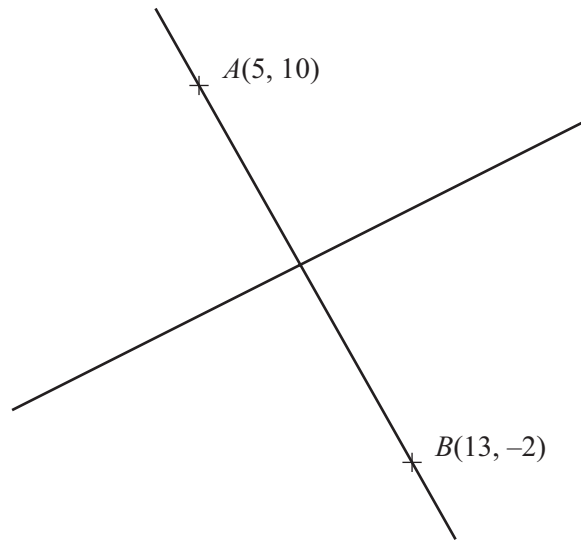
(a) angle OCA ,

Answer(a) Angle $OCA =$ [2]

(b) angle DCA .

Answer(b) Angle $DCA =$ [2]

14



NOT TO
SCALE

$A(5, 10)$ and $B(13, -2)$ are two points on the line AB .
The perpendicular bisector of the line AB has gradient $\frac{2}{3}$.

Find the equation of the perpendicular bisector of AB .

Answer [4]

15 Solve the inequality for positive integer values of x .

$$\frac{21+x}{5} > x+1$$

Answer [4]

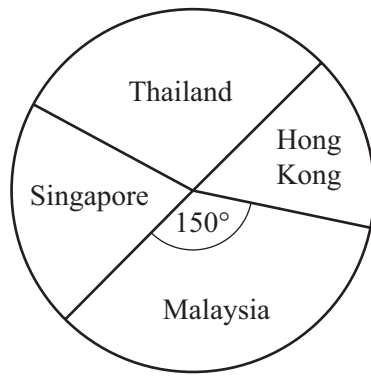
16 (a) $(2^{24})^{\frac{1}{2}} = p^4$

Find the value of p .

Answer(a) $p =$ [2]

(b) Simplify $\frac{q^2 + q^2}{q^{\frac{1}{4}} \times q^{\frac{1}{4}}}$.

Answer(b) [3]



NOT TO SCALE

A travel brochure has 72 holidays in four different countries. The pie chart shows this information.

- (a) There are 24 holidays in Thailand.

Show that the sector angle for Thailand is 120° .

Answer(a)

[2]

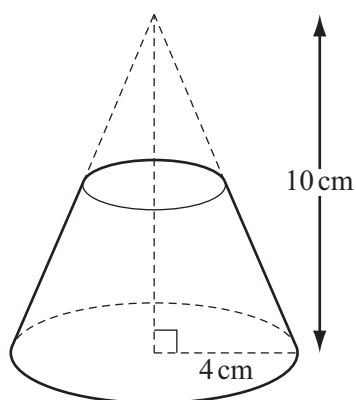
- (b) The sector angle for Malaysia is 150° .
The sector angle for Singapore is twice the sector angle for Hong Kong.

Calculate the number of holidays in Hong Kong.

Answer(b) [3]

18

11



NOT TO SCALE

A **solid** cone has base radius 4 cm and height 10 cm.
A mathematically similar cone is removed from the top as shown in the diagram.
The volume of the cone that is removed is $\frac{1}{8}$ of the volume of the original cone.

(a) Explain why the cone that is removed has radius 2 cm and height 5 cm.

Answer(a)

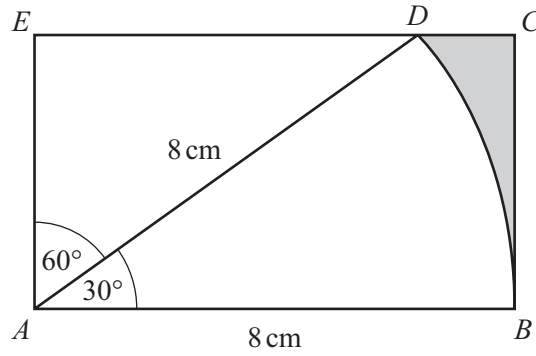
[2]

(b) Calculate the volume of the remaining solid.

[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

Answer(b) cm³ [4]

Question 19 is printed on the next page.



NOT TO SCALE

The diagram shows a rectangle $ABCE$.
 D lies on EC .
 DAB is a sector of a circle radius 8 cm and sector angle 30° .

Calculate the area of the shaded region.

Answer cm^2 [7]

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