

1 Use your calculator to find the value of 1.35^7 .

Give your answer correct to 5 significant figures.

Answer [2]

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

π 3.14 $\frac{22}{7}$ 3.142 3

Answer < < < < [2]
smallest

3

ZEBRA

Write down the letters in the word above that have

(a) exactly one line of symmetry,

Answer(a) [1]

(b) rotational symmetry of order 2.

Answer(b) [1]

- 4 Cheryl recorded the midday temperatures in Seoul for one week in January.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Temperature (°C)	-4	-5	-3	-11	-8	-3	-1

- (a) Write down the mode.

Answer(a) °C [1]

- (b) On how many days was the temperature lower than the mode?

Answer(b) [1]

- 5 Without using a calculator, work out $\frac{1}{4} + \frac{1}{6}$.

Write down all the steps in your working and give your answer as a fraction in its simplest form.

Answer [2]

- 6 Write 15.0782 correct to

- (a) one decimal place,

Answer(a) [1]

- (b) the nearest 10.

Answer(b) [1]

- 7 The population of Dubai at the end of 2012 was 2.1 million.
This was predicted to increase at a rate of 6% each year.

Calculate the predicted population of Dubai at the end of 2015.

Answer million [3]

- 8 On a ship, the price of a gift is 24 euros (€) or \$30.

What is the difference in the price on a day when the exchange rate is €1 = \$1.2378?
Give your answer in dollars, correct to the nearest cent.

Answer \$ [3]

- 9 (a) Write 2.8×10^2 as an ordinary number.

Answer(a) [1]

- (b) Work out $2.5 \times 10^8 \times 2 \times 10^{-2}$.
Give your answer in standard form.

Answer(b) [2]

- 10 Solve the equation.

$$\frac{x+5}{x} = \frac{7}{3}$$

Answer x = [3]

11 (a) Simplify $x^8 \div x^2$.

Answer(a) [1]

(b) Simplify $\left(\frac{x^6}{27}\right)^{\frac{1}{3}}$.

Answer(b) [2]

12 Solve the simultaneous equations.

$$0.4x - 5y = 27$$

$$2x + 0.2y = 9$$

Answer $x =$

$y =$ [3]

13 y varies directly with $\sqrt{x + 5}$.
 $y = 4$ when $x = -1$.

Find y when $x = 11$.

Answer $y =$ [3]

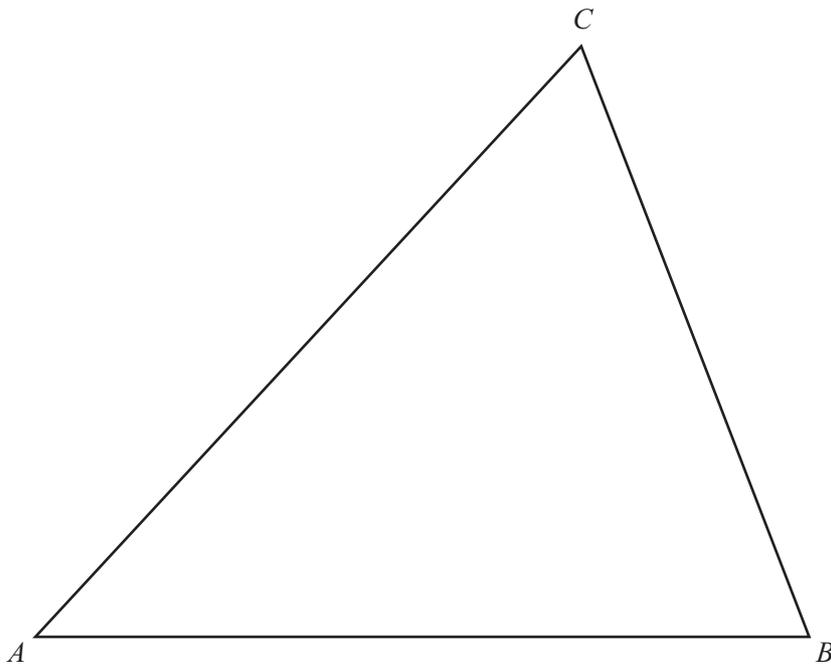
14

$$\mathbf{A} = \begin{pmatrix} 2 & 8 \\ 1 & 4 \end{pmatrix}$$

Work out $\mathbf{A}^2 - 4\mathbf{A}$.

Answer $\left(\begin{array}{cc} & \\ & \end{array} \right)$ [3]

15



(a) Using compasses and straight edge only, construct

(i) the perpendicular bisector of AC , [2]

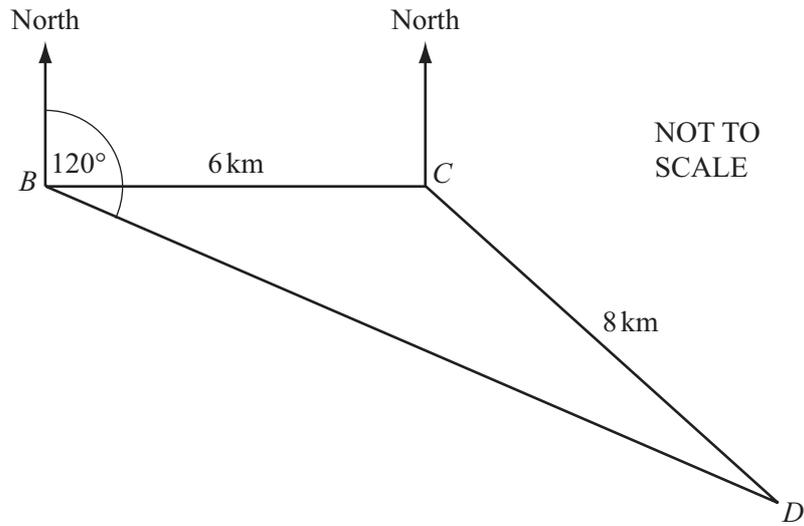
(ii) the bisector of angle ACB . [2]

(b) Shade the region inside the triangle which is

• nearer to A than to C
and

• nearer to AC than to BC . [1]

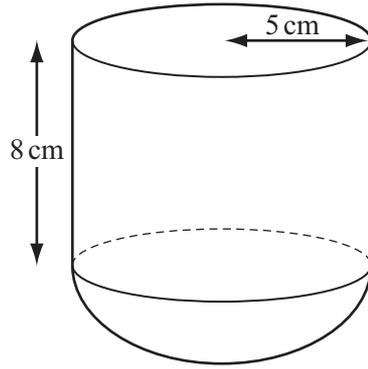
- 16 A helicopter flies from its base B to deliver supplies to two oil rigs at C and D .
 C is 6 km due east of B and the distance from C to D is 8 km.
 D is on a bearing of 120° from B .



Find the bearing of D from C .

Answer [5]

17 The diagram shows a child's toy.



NOT TO
SCALE

The shape of the toy is a cylinder of radius 5 cm and height 8 cm on top of a hemisphere of radius 5 cm.

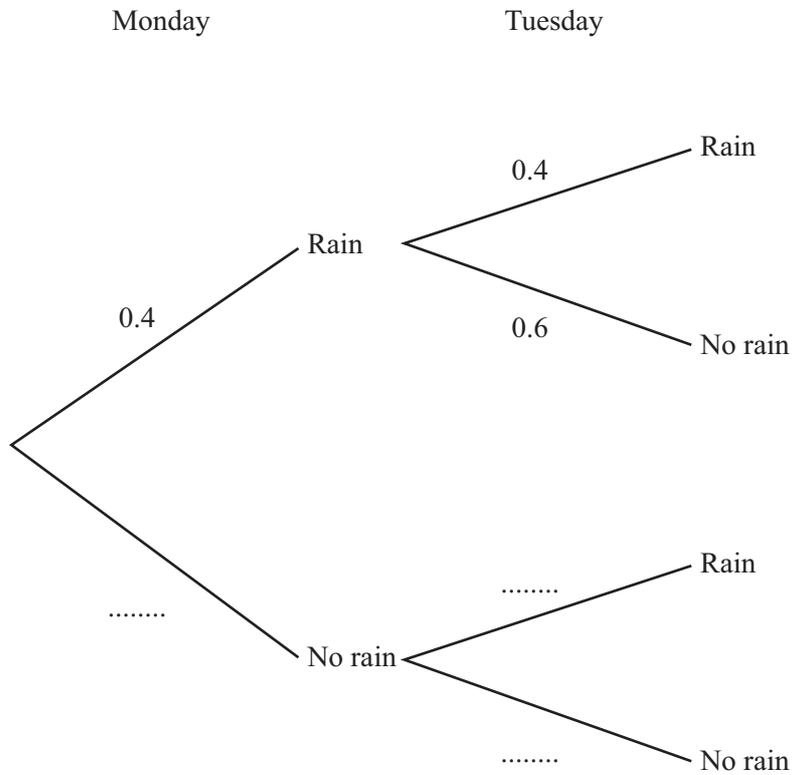
Calculate the volume of the toy.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

Answer cm³ [5]

- 18 If it rains today the probability that it will rain tomorrow is 0.4 .
 If it does not rain today the probability that it will rain tomorrow is 0.2 .
 On Sunday it rained.

(a) Complete the tree diagram for Monday and Tuesday.

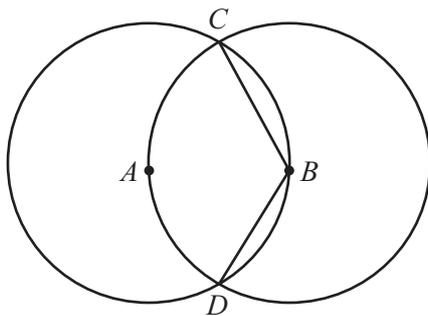


[2]

- (b) Find the probability that it rains on at least one of the two days shown in the tree diagram.

Answer(b) [3]

19



NOT TO SCALE

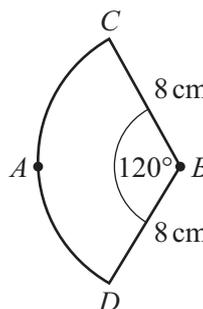
Two circles, centres A and B , are each of radius 8 cm and intersect at C and D . Each circle passes through the centre of the other circle.

(a) Explain why angle CBD is 120° .

Answer(a)

[1]

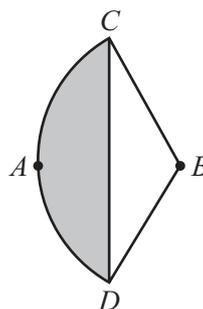
(b) For the circle, centre B , find the area of the sector BCD .



NOT TO SCALE

Answer(b) cm^2 [2]

(c) (i) Find the area of the shaded segment CAD .



NOT TO SCALE

Answer(c)(i) cm^2 [3]

(ii) Find the area of overlap of the two circles.

Answer(c)(ii) cm^2 [1]

Question 20 is printed on the next page.

20 $f(x) = 3x - 2$ $g(x) = \frac{2}{x+1}$, $x \neq -1$

(a) Find $gf(2)$.

Answer(a) [2]

(b) Solve $g(x) = 10$.

Answer(b) $x =$ [2]

(c) Simplify.

$$f(2x) - f(x + 2)$$

Answer(c) [3]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.