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## 0580/13

October/November 2010

**1 hour**

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Electronic calculator

## Geometrical instruments

Tracing paper (optional)

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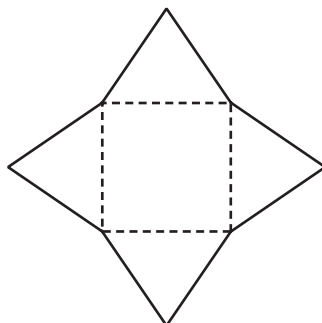
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2

1



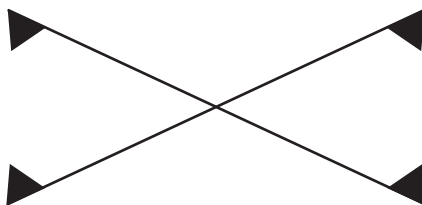
Write down the name of the solid that can be made from the net shown in the diagram.

Answer ..... [1]

2 Write down all the square numbers which are factors of 100.

Answer ..... [2]

3



For the diagram, write down

(a) the number of lines of symmetry,

Answer(a) ..... [1]

(b) the order of rotational symmetry.

Answer(b) ..... [1]

4 In a desert the temperature at noon was  $38^{\circ}\text{C}$ .  
At midnight the temperature was  $-3^{\circ}\text{C}$ .

(a) Find the change in temperature between noon and midnight.

Answer(a) .....  $^{\circ}\text{C}$  [1]

(b) At 02 00 the temperature was  $4^{\circ}\text{C}$  below the midnight temperature.

Write down the temperature at 02 00.

Answer(b) .....  $^{\circ}\text{C}$  [1]

- 5 Multiply out the brackets.

$$x(2x + y)$$

Answer ..... [2]

- 6 Solve the equation.

$$\frac{2x + 1}{3} = 4$$

Answer  $x =$  ..... [2]

- 7 Work out  $\sqrt[3]{7.2^3 - 100}$ .  
Give your answer correct to 3 decimal places.

Answer ..... [2]

- 8 Chris and Max share \$45 in the ratio Chris:Max = 7 : 2 .

Calculate how much Chris receives.

Answer \$ ..... [2]

- 9 When Valentina was 10 years old, her mass was 32 kg.  
Two years later her mass had increased by 45%.

Calculate Valentina's mass when she was 12 years old.

Answer ..... kg [2]

- 10 Change 18.75% into a fraction.

Write your answer in its lowest terms.

Answer ..... [2]

- 11 Factorise completely.

$$3ac - 6ad$$

Answer ..... [2]

- 12 Simplify  $\left(1\frac{1}{2}\right)^{-3}$ .

Give your answer as a fraction.

Answer ..... [2]

- 13 Solve the simultaneous equations.

$$3x + y = 5$$

$$5x + y = 9$$

Answer  $x =$  .....  
 $y =$  ..... [2]

- 14

17

27

$\sqrt{17}$

0.294

$\frac{5}{17}$

From the list of numbers, write down

- (a) a prime number,

Answer(a) ..... [1]

- (b) an irrational number,

Answer(b) ..... [1]

- (c) the smallest number.

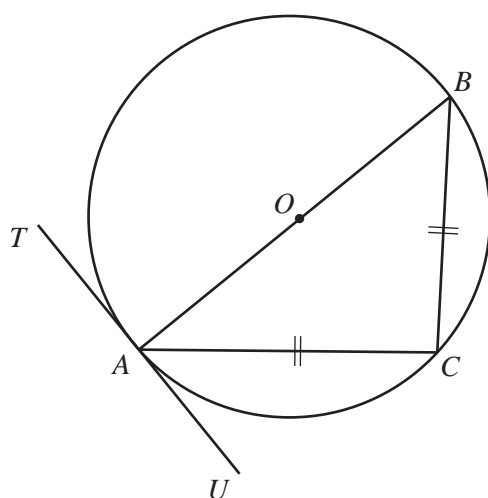
Answer(c) ..... [1]

- 15 Amiria invests \$200 for 2 years at 3% per year **compound** interest.

Calculate the total amount Amiria has at the end of the two years.

Answer \$ ..... [3]

16



NOT TO  
SCALE

In the diagram,  $TAU$  is a tangent to the circle at  $A$ .  
 $AB$  is a diameter of the circle and  $AC = BC$ .

Find

- (a) angle  $BCA$ ,

Answer(a) Angle  $BCA =$  ..... [1]

- (b) angle  $ABC$ ,

Answer(b) Angle  $ABC =$  ..... [1]

- (c) angle  $CAU$ .

Answer(c) Angle  $CAU =$  ..... [1]

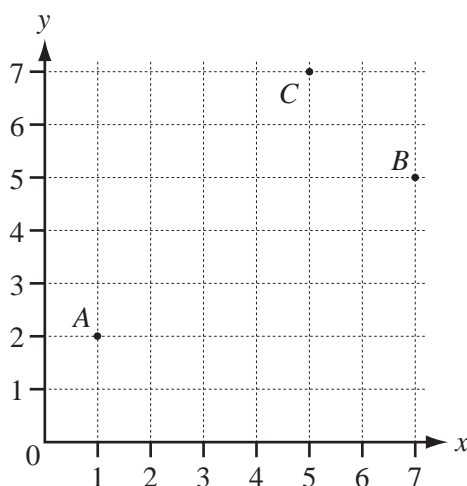
17 Insert brackets to make each statement correct.

(a)  $7 + 2 \times 9 = 81$  [1]

(b)  $36 \div 6 \div 2 = 12$  [1]

(c)  $5 \times 3 + 6 \times 2 = 90$  [1]

18



The diagram shows three points,  $A(1, 2)$ ,  $B(7, 5)$  and  $C(5, 7)$ .

(a) Write as column vectors

(i)  $\vec{AC}$ ,

Answer(a)(i)  $\vec{AC} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

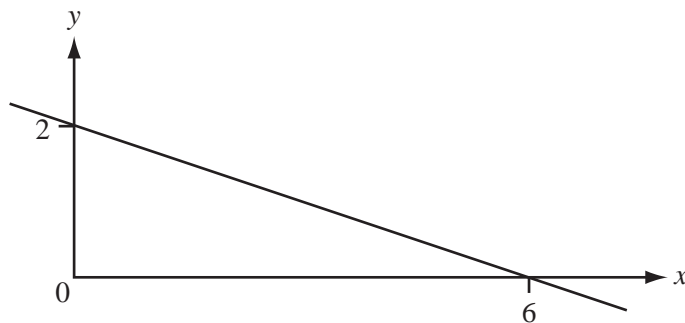
(ii)  $\vec{CB}$ .

Answer(a)(ii)  $\vec{CB} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

(b) Use two of the symbols  $+$ ,  $-$ ,  $=$  in the spaces to make a correct statement.

$\vec{AC} \dots\dots\dots \vec{CB} \dots\dots\dots \vec{AB}$  [1]

19



The diagram shows a straight line passing through the points (0, 2) and (6, 0).

Find the equation of this line in the form  $y = mx + c$ .

Answer  $y =$  ..... [3]

20



- (a) The diagram shows 5 discs.  
One disc is chosen at random.

- (i) Which number is most likely to be chosen?

Answer(a)(i) ..... [1]

- (ii) What is the probability that the number on the disc is even?

Answer(a)(ii) ..... [1]

- (iii) What is the probability that the number on the disc is even and a factor of 20?

Answer(a)(iii) ..... [1]

- (b) A disc is chosen at random from the discs with even numbers.

What is the probability that the number on the disc is a factor of 20?

Answer(b) ..... [1]

Questions 21 and 22 are printed on the next page

21

0    0    0    1    2    2    4    4    5    9

The list shows the number of days absent in a school term for each of 10 students.

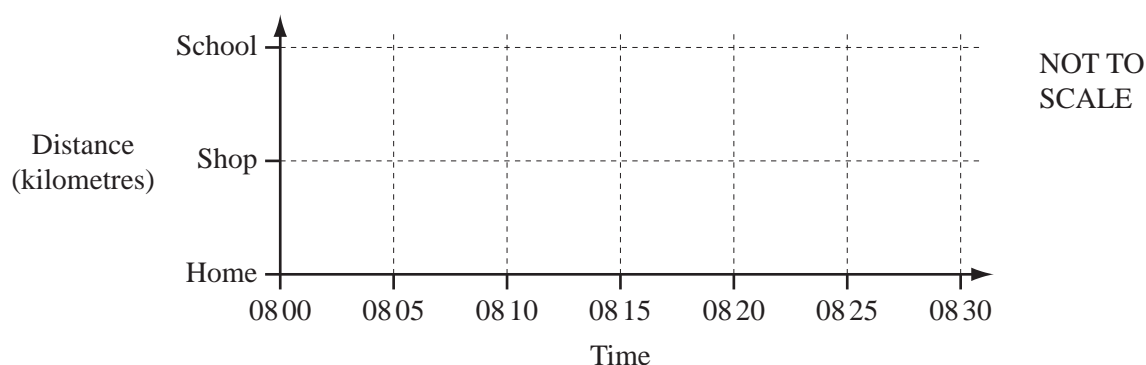
Find the mode, the median and the mean for the number of days absent.

Answer Mode = .....

Median = .....

Mean = ..... [4]

22



Rob walks to school each morning.

One day, he leaves home at 08 00.

He stops at a shop at 08 10 and stays there for 5 minutes.

He then continues to school and arrives at 08 30.

(a) Draw the travel graph for Rob's journey from home to school. [3]

(b) Rob's average speed for the whole journey from home to school is 3.3 km/h.

Calculate the distance from Rob's home to school.

Answer(b) ..... km [2]