

1. Insert brackets in the appropriate place to make the equation correct:

(a)  $7 - 5 - 3 + 4 = 9$  [1]

(b)  $6 + 3 \times 9 = 81$  [1]

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

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

2.            3.56        5         $\sqrt{196}$         8         $\sqrt{7}$         12

From the given list, write down:

(a) A multiple of 3 ..... [1]

(b) A cube number ..... [1]

(c) A prime number ..... [1]

(d) An irrational number ..... [1]

3. Expand the brackets and simplify:

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

..... [3]

4. The test scores of 14 students are shown below:

21 21 23 26 25 21 22 20 21 23  
23 27 24 21

Find the following:

(a) Range ..... [1]

(b) Mode ..... [1]

(c) Median

(d) Mean

..... [2]

..... [2]

5. The temperature at 0700 is  $-3^{\circ}C$

This is  $11^{\circ}C$  higher than the temperature at midnight.

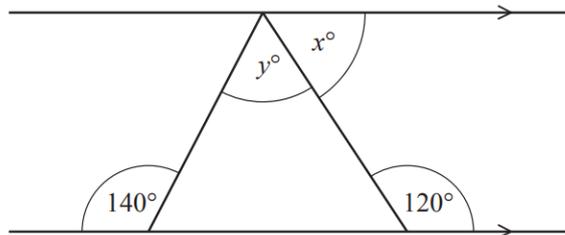
Find the temperature at midnight.

..... [2]

6. Write  $x^2 + 8x - 9$  in the form  $(x + k)^2 + h$

..... [2]

7. The diagram shows a triangle between a pair of parallel sides:



NOT TO SCALE

Find the value of  $x$  and  $y$ .

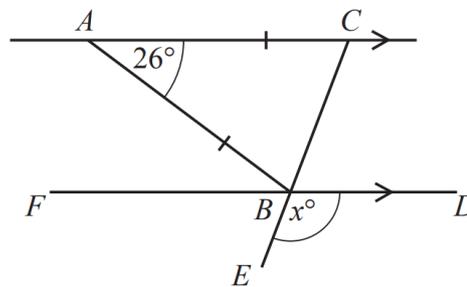
$x = \dots\dots\dots, y = \dots\dots\dots$  [3]

8. Calculate the size of an interior angle of a polygon with 40 sides.

..... [2]

9. The exterior angle of a regular polygon is  $30^\circ$ .  
Calculate the number of sides of the polygon.

10. In the given diagram, find the value of  $x$



NOT TO  
SCALE

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

**11.** By writing each number correct to 1 significant figure, work out an estimate for T:

$$T = \frac{49.2 - 9.50}{4.085 \times 2.26}$$

Show all your working.

$T = \dots\dots\dots$  [3]

**12.** Factorise and solve the equation to find  $x$ :

$$6x^2 + 7x - 20 = 0$$

$x = \dots\dots\dots$  [5]

13. The table shows how children in Ivan's class travel to school:

| Travel to school | No. of children | Sector angle |
|------------------|-----------------|--------------|
| Walk             | 12              |              |
| Car              | 7               |              |
| Bicycle          | 9               |              |
| Bus              | 8               |              |

Ivan wants to draw a pie chart to show this information.

Help him by calculating the sector angles for each and write them in the table.

[2]

14. Solve the simultaneous equations: Show all your working.

$$3x - 8y = 22$$

$$x + 4y = 4$$

$x = \dots\dots\dots$ ,  $y = \dots\dots\dots$  [3]

15. Solve:  $9f + 11 = 3f + 23$

$f = \dots\dots\dots$  [2]

16. Factorise:

(a)  $x^2 - 25$

$\dots\dots\dots$  [1]

(b)  $12ab^3 + 18a^3b^2$

$\dots\dots\dots$  [2]

17. Solve:

$$\frac{2x + 5}{3 - x} = \frac{14}{15}$$

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

18. In a cycling club, the number of members is in the ratio males : females = 8 : 3

The club has 342 females.

(a) Find the total number of members.

$\dots\dots\dots$  [2]

(b) Find the percentage of the total number of members that are female.

$\dots\dots\dots\%$  [1]