

## E Maths Test 2

/60 Marks

1. At noon, the temperature is  $4\text{ }^{\circ}\text{C}$ .  
At midnight, the temperature is  $-9\text{ }^{\circ}\text{C}$ .  
Work out the difference in temperature between noon and midnight.

$^{\circ}\text{C}$  [1]

2. Find the total surface area of a cuboid with length 8 cm, width 6 cm and height 3 cm.

$\text{cm}^2$  [3]

3. The price of a coat is \$126.  
In a sale, this price is reduced by 18%.  
Find the sale price of the coat.

[2]

4. The  $n$ th term of a sequence is  $n^2 + 12$ .  
Find the first three terms of this sequence.

[2]

5. Find the value of  $p$  when  $6^p \times 6^4 = 6^{28}$ .

[1]

6. **Without using a calculator**, work out  $4\frac{1}{8} - 2\frac{5}{6}$ .

You must show all your working and give your answer as a mixed number in its simplest form.

[3]

7. Carlos invests \$4540 at a rate of  $r\%$  per year compound interest. At the end of 10 years he has earned \$1328.54 in interest.

Calculate the value of  $r$ .

[3]

8.  $f(x) = 7x - 8$        $g(x) = \frac{4}{x} + 5$        $h(x) = 2^x + 1$
- a. Find  $f^{-1}(x)$ .

[2]

- b. Find the value of  $x$  when  $h(x) = g(\frac{1}{3})$ .

[2]

9. Factorise completely.

(a)  $2m + 3p - 8km - 12kp$

[2]

(b)  $5x^2 - 20y^2$

[3]

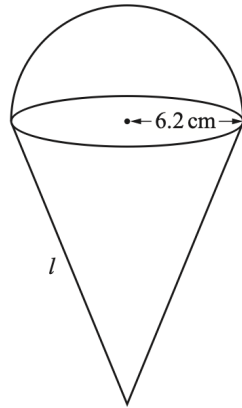
10. The  $n$ th term of a sequence is  $an^2 + bn - 4$ .

The first term is -3 and the second term is 2.

Find the value of  $a$  and the value of  $b$ .

[5]

11.



NOT TO  
SCALE

The diagram shows a solid metal shape made from a cone and a hemisphere, both with radius 6.2 cm. The total surface area of the solid shape is  $600 \text{ cm}^2$ .

Calculate the slant height,  $l$ , of the cone.

[The surface area,  $A$ , of a sphere with radius  $r$  is  $A = 4\pi r^2$ .]

[The curved surface area,  $A$ , of a cone with radius  $r$  and slant height  $l$  is  $A = \pi r l$ .]

cm [4]

12. (a) Find the lowest common multiple (LCM) of 30 and 75.

[2]

(b) Work out  $\frac{6.39 \times 10^4}{2.45 \times 10^6}$ .

[2]

(c) Write 0.27 as a fraction.

[1]

13. (a) Solve.

$$10 - 3p = 3 + 11p$$

[2]

(b) Make  $m$  the subject of the formula.

$$mc^2 - 2k = mg$$

[3]

(c) Solve.

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

[5]

(d) Expand and simplify.

$$(2x-3)(x+6)(x-4)$$

[3]

14. (a) Find the next term and the  $n$ th term of this sequence.

$$\frac{3}{5}, \frac{4}{7}, \frac{5}{9}, \frac{6}{11}, \frac{7}{13}, \dots$$

Next term .....

$n$ th term .....

[3]

(b) Find the  $n$ th term of each sequence.

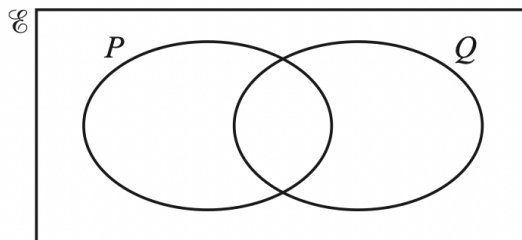
(i)  $-1, -3, -5, -7, -9, \dots$

[2]

(ii)  $2, 9, 28, 65, 126, \dots$

[2]

15.



Shade  $(P \cup Q)'$ .

[2]