

# **N5 Mathematics**

## **Expressions and Formulae**

### **Practice Assessment**

**3**

## Expressions and Formulae Assessment Standard 1.1

- 1 Simplify fully, giving your answer in surd form :

$$\sqrt{98}.$$
 (2)

- 2 (a) Simplify :

(i)  $\frac{x^9 \times x^3}{x^8}.$  (2)

(ii)  $4x^5 \times 5x^{-\frac{1}{2}}.$  (2)

- (b) The average distance from the planet Krypton to the planet Vulcan is  $8.6 \times 10^8$  miles. The average distance from Krypton to the planet Benzar is  $7.4$  times as great as the average distance from Krypton to Vulcan.

Calculate the average distance from Krypton to Benzar.  
Give your answer in scientific notation.

(2)

## Expressions and Formulae Assessment Standard 1.2

- 3 Expand and simplify where appropriate :

(a)  $y(6y - x).$  (1)

(b)  $(t + 5)(t + 6).$  (2)

- 4 Factorise :

(a)  $x^2 - 7x.$  (1)

(b)  $a^2 - 81.$  (1)

(c)  $y^2 + 11y + 30.$  (2)

- 5 Express  $x^2 + 10x + 27$  in the form  $(x + p)^2 + q$ . (2)

### Expressions and Formulae Assessment Standard 1.3

- 6 Write

$$\frac{(5x - 1)(x + 4)}{(x + 4)^2}, \quad x \neq -4$$

in its simplest form. (1)

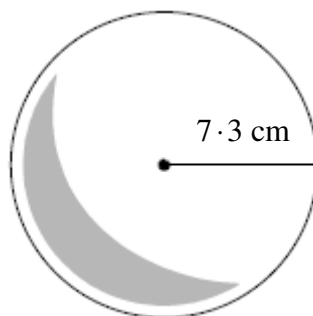
- 7 Write the following as a single fraction :

$$\frac{r}{7} \div \frac{t}{d} \quad t, d \neq 0 \quad (2)$$

### Expressions and Formulae Assessment Standard 1.4

- 8 Points A and B have coordinates  $(-1, -4)$  and  $(12, 6)$  respectively.  
Calculate the gradient of AB. (2)

- 9 Calculate the volume of a sphere with radius  $7.3$  cm, giving your answer correct to two significant figures. (3)

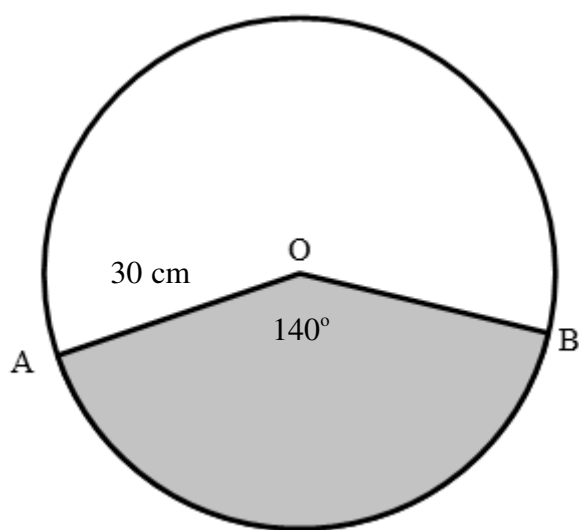


- 10 A shop supplies cardboard party hats like the one shown in Diagram 1.



Diagram 1

In Diagram 2 the shaded area represents the cardboard used in one of these hats.



AB is a minor arc of the circle with centre O.

The radius OA is 30 cm.

Angle AOB is  $140^\circ$ .

Diagram 2

- (a) Calculate the length of minor arc AB. (3)
- (b) The shop wants to put tinsel around the base of the hats.  
They have 100 metres of tinsel in stock.

What is the maximum number of hats they can decorate from the 100 metres ?

(#2.1 and #2.2)