2 Unit test

1 47 **[1]**, 76 **[1]**

2 a equation **[1]** b expression **[1]** c identity **[1]** d formula **[1]**

3 a $20x - 8 = 32$ **[1]**
$20x = 40$ **[1]**
$x = 2$ **[1]**

b $5x + 3 = -12$ **[1]**
$5x = -15$ **[1]**
$x = -3$ **[1]**

4 a $63q^5$ **[2]** [**1** for 63, **1** for q^5] b $5y3$ **[2]** [1 for 5, 1 for $y3$] c c8 **[1]**

5 a $12x^2 + 3xy$ **[2]** [**1** for each term] b $x^2 + x - 12$ **[2]** [**1** for x, **1** for -12]

c $x^2 - 14x + 49$ **[2]** [**1** for $-14x$, **1** for 49]

6 27 **[1]**, 9 **[1]**, 3 **[1]**

7 a $6n - 2$ **[2]** [1 for each term] b The terms in the sequence are all even but 231 is odd **[1]**

c $6n - 2 > 234$ or $6n - 2 > 234$ solved **[1]**
When $n = 40$ **[1]**, $6n - 2 = 238$ **[1]**

8 a i £36 000 **[1]** ii £32 400 **[1]**

b Sequence continued **[1]**, 7 years **[1]**

c i Stays the same **[1]** ii Decreases **[1]**

9 $2x = y - 5$ **[1]**
$x = \frac{y - 5}{2}$ **[1]**

10 First differences = 9, 15, 21, ... **[2]**, second differences = 6 **[1]**, $a = 3$ **[1]**
Compare given sequence with $3n^2$, difference is 1 **[1]**
nth term = $3n^2 - 1$ **[1]**

11 a $\frac{4x - 3}{15} = \frac{x + 3}{5}$ **[1]** b $4x - 3 = 3(x + 3)$ **[1]**, leading to $x = 12$ **[1]**

c BC = $\frac{5 \times 12 + 6}{33}$ **[1]** = $\frac{66}{33}$ = 2 cm **[1]**

12 2.7×10^9 **[1]**

13 a $(x + 4)(x - 4)$ **[1]** b $3y(2y - 3x)$ **[2]** [**1** for each factor] c $(x + 5)(x - 2)$ **[2]** [**1** for + 5, **1** for − 2]

Sample student answer

a You can label the dimensions you know.

b From the formulae sheet.

c It separates the sphere from the cone.

d So it doesn't get confused with the radius of the sphere.