Preparation for Assessment: Unit 1

1 **a** $2\sqrt{5}$
b $3\sqrt{2}$
c $\sqrt{55}$
d $3\sqrt{70}$

2 $4\sqrt{5}$

3 $2\sqrt{21}$ has a different value;
$\sqrt{7} \times \sqrt{9} = \sqrt{7} \times 3 = 3\sqrt{7}$.

4 $4\sqrt{2}$

5 **a** $\frac{2}{k^2}$
b $15g^{\frac{8}{3}}$
c $20a$
d y^4
e $\frac{4p^9}{3}$
f $\frac{a^4b^2}{2}$

6 8.4×10^5 pixels (2 s.f.)

7 13 minutes 13 seconds

8 1.75×10^7 km^2

9 **a** $2x^2 + xy$
b $t^2 - 7t - 12$
c $24u - 15u^2$
d $p^2 - 9p + 18$
e $x^2 - x - 12$
f $6s^2 - 3s - 5$

10 **a** $6(x + 4)$
b $t(t - 2)$
c $(6 - a)(6 + a)$
d $(2t - 7)(2t + 7)$
e $(x + 3)(x + 4)$
f $(x + 5)(x - 2)$

11 **a** $(x + 3)^2 + 6$
b $(x + 4)^2 - 3$
c $(x - 5)^2 - 30$
d $(x + 1)^2 - 10$

12 **a** $\frac{(x+1)}{(x+2)}$
b $\frac{(2x+2)}{(x-7)}$
c $\frac{3c}{2}$
d z^2

13 **a** $\frac{3y+x^2}{3xy}$
b $\frac{8-a}{4b}$
c $\frac{3r}{w^2}$
d $\frac{6f}{e}$

14 **a** $\frac{12s-1}{4}$
b $\frac{13-5c}{5}$

15 **a** $\frac{(x+4)^2}{4-x^2}$
b $\frac{4-x}{3-x}$

16 **a** $\frac{3}{2}$
b -2

17 **a** **i** 2
ii $\frac{9}{7}$
iii 2
b i and ii

18 **a** 52 cm^2
b 11 cm

19 **a** 3.2 m^2
b 4 merry-go-rounds

20 **a** 7988 mm^2
b 521.8 mm

21 1.32×10^6 mm^3

22 3.6×10^4 cm^3

23 65140 cm^3

24 **a** 1.92×10^5 cm^3
b 524 cm^3
c 367 balls

25 **a** 14 cm^3

b 8915 styluses

26 **a** **i** 50 000

ii 51 000

iii 50 900

b **i** 0.3

ii 0.26

iii 0.256

c **i** 60

ii 59

iii 58.7

d **i** 0.005

ii 0.0046

iii 0.004 59