

- 1 One part = $9000 \div 9 = 1000$
 Two parts = $1000 \times 2 = 2000$
 Seven parts = $1000 \times 7 = 7000$
- 2 One part = $15\,000 \div 5 = 3000$
 Two parts = $3000 \times 2 = 6000$
- 3 $\frac{x}{6} = \frac{9}{15}$
 $x = \frac{9 \times 6}{15} = 3.6$
- 4 $\frac{144}{p} = \frac{6}{11}$
 $\frac{p}{144} = \frac{11}{6}$
 $p = \frac{11 \times 144}{6} = 264$
- 5 $\frac{x}{3} = \frac{15}{2}$
 $x = \frac{15 \times 3}{2} = 22.5$
- 6 $6 : 5 : 7 = 180^\circ$
 One part = $180^\circ \div 18 = 10^\circ$
 Six parts = $10^\circ \times 6 = 60^\circ$
 Five parts = $10^\circ \times 5 = 50^\circ$
 Seven parts = $10^\circ \times 7 = 70^\circ$
- 7 Suppose they receive \$ x , \$ y and \$ z respectively.
 $\frac{x+2}{x} = \frac{3}{2}$
 $2(x+2) = 3x$
 $2x+4 = 3x$
 $x = 4$
 X receives \$4 and Y receives \$6.
 Two parts = \$4
 One part = \$2
 Seven parts = \$14
 Z receives \$14.
- 8 One part = 10 g
 Three parts = $10 \text{ g} \times 3 = 30 \text{ g}$ (zinc)
 Four parts = $10 \text{ g} \times 4 = 40 \text{ g}$ (tin)
- 9 Seven parts = 56
 One part = $56 \div 7 = 8$ green beads
 Two parts = $8 \times 2 = 16$ white beads
- 10 One part = 45 mm
 $125\,000 \text{ parts} = 45 \text{ mm} \times 125\,000$
 $= 5\,625\,000 \text{ mm}$
 $= 5.625 \text{ km}$

11 One part = $\$5200 \div 13 = \400
 Eight parts = $\$400 \times 8$
 = $\$3200$ (mother)
 Five parts = $\$400 \times 5$
 = $\$2000$ (daughter)
 Difference = $\$1200$

12 If BC is one part, AB and CD are each two parts. AD is 5 parts and BD is 3 parts, so $BD = \frac{3}{5}AD$.

13 The ratio will be $\pi : 1$, as for any circle.

14 One part = $30 \div 5 = 6$
 Two parts = $6 \times 2 = 12$ (boys)
 Three parts = $6 \times 3 = 18$ (girls)
 After six boys join the class, there are 18 boys and 18 girls, so the ratio is 1:1.

15 $\frac{b}{a} = \frac{4}{3}$ and $\frac{b+c}{a} = \frac{5}{2}$
 $\frac{b+c}{a} = \frac{5}{2}$
 $\frac{b}{a} + \frac{c}{a} = \frac{5}{2}$
 $\frac{4}{3} + \frac{c}{a} = \frac{5}{2}$
 $\frac{c}{a} = \frac{5}{2} - \frac{4}{3}$
 $= \frac{15-8}{6} = \frac{7}{6}$
 $\therefore a : c = 6 : 7$

16 One part = 3.5 cm
 250 000 parts = $3.5 \text{ cm} \times 250\,000$
 = 875 000 cm
 = 8.75 km

17 $\frac{a-c}{b-d} = \frac{c}{d}$
 $\Leftrightarrow (a-c)d = (b-d)c$
 $\Leftrightarrow ad - cd = bc - dc$
 $\Leftrightarrow ad = bc$
 $\Leftrightarrow \frac{a}{b} = \frac{c}{d}$

18 $a = \frac{2}{3}x, b = \frac{2}{3}y, c = \frac{2}{3}z$
 $\therefore \frac{a+b+c}{x+y+z} = \frac{\frac{2}{3}(x+y+z)}{x+y+z} = \frac{2}{3}$

19 $\frac{x+y}{x-y} = \frac{m+n}{m-n}$
 $\Leftrightarrow (x+y)(m-n) = (x-y)(m+n)$
 $\Leftrightarrow xm - xn + ym - yn = xm + xn - ym - yn$
 $\Leftrightarrow 2ym = 2xn$
 $\Leftrightarrow \frac{m}{n} = \frac{x}{y}$