

Worksheet 3.1 Ratio, Rate, Proportion.

1 a) $4:16 = 1:4$ b) $5:10 = 1:2$ c) $500:15 = 100:3$ d) $535:25 = 107:5$

2) $\$38.25 / 45 \text{ pounds}$
 $= \$0.85 / \text{pound}$

3) a) $\frac{48}{76}$
 $= \frac{12}{19}$

b) $\frac{20}{48}$
 $= \frac{5}{12}$

c) $\frac{81000}{240}$
 $= \frac{675}{2}$

4 a) $640 \text{ miles} / 25 \text{ hours}$
 $= 25.6 \text{ miles/hour}$

b) $\$30.50 / 32 \text{ oz.}$
 $= \$0.95 / \text{oz.}$

c) $\$4.76 / 7 \text{ notebooks}$
 $= 68¢ / \text{notebook}$

5) $5:20:50$
 $= 1:4:10$
 (A)

6) $\frac{48}{72}$
 $= \frac{2}{3}$ (B)

7) $\frac{21}{56}$
 $= \frac{3}{8}$

(B) $\frac{12}{15}$
 $= \frac{4}{5} \times$

(C) $\frac{12}{32}$
 $= \frac{3}{8} \checkmark$
 $\therefore (C)$

8) $\frac{7}{8}$

(B) $\frac{42}{48}$
 $= \frac{7}{8} \checkmark \therefore (B)$

9) 60 girls, 18 boys
 $60:18 = 10:3$ (C)

10) ~~4 tires / 1.9 people~~
 ~~$= \frac{40}{19} \text{ tires/person}$~~

10). 35 red 60 total
 $35:60 = 7:12$ (E)

12a) $\frac{24}{17} = \frac{m}{34}$
 $m = 24 \times 2$
 $m = 48$

b) $\frac{14}{a} \times \frac{4}{14}$
 $4a = 196$
 $a = 49$

12c) $\frac{5}{9} \times \frac{3}{y}$
 $5y = 27$
 $y = 5.4$

d) $\frac{5}{7} \times \frac{13}{p}$
 $5p = 91$
 $p = \frac{91}{5}$

$\frac{5}{7} = \frac{r}{35}$
 $r = 5 \times 5$
 $r = 25$

e) $\frac{120}{77} = \frac{x}{100}$
 $x = \frac{120}{77} \times 100$
 $x = \frac{12000}{77}$

(D) 18.2

f) $\frac{1}{m} = \frac{3}{n} = \frac{6}{40}$
 $\frac{1}{m} = \frac{6}{40}$
 $6m = 40$
 $m = \frac{40}{6}$
 $m = \frac{20}{3}$

$\frac{3}{n} = \frac{6}{40}$
 $n = 20$

11a) $\frac{30}{80}$
 $= \frac{3}{8} \checkmark$
 Yes!
 $\therefore \frac{30}{80} = \frac{12}{32}$

b) $\frac{12}{15}$
 $= \frac{4}{5} \times$
 No!
 $\therefore \frac{12}{15} \neq \frac{2}{3}$

c) $\frac{6}{9}$
 $= \frac{2}{3} \checkmark = \frac{2}{3}$
 Yes!
 $\therefore \frac{6}{9} = \frac{14}{21}$

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$$13. \quad b:g = 9:5$$

$$\frac{b}{g} = \frac{9}{5} = \frac{b}{85}$$

$$b = \frac{9}{5} \times 85$$

$$b = 153$$

$$14. \quad \frac{t}{s} = \frac{2}{45}$$

$$\frac{\text{teachers}}{\text{total}} = \frac{2}{47}$$

$$\frac{t}{1410} = \frac{2}{47}$$

$$t = \frac{2}{47} \times 1410$$

$$t = 60$$

$$15. \quad \frac{b}{g} = \frac{4}{3}$$

$$\frac{b}{42} = \frac{4}{3}$$

$$b = \frac{4}{3} \times 42$$

$$b = 56$$

$$16. \quad \frac{p}{g} = \frac{190}{4}$$

$$\frac{p}{13} = \frac{190}{4}$$

$$p = \frac{190}{4} \times 13$$

$$p = 617.5 \text{ or } 618.$$

$$17. \quad \frac{\text{part } 7}{\text{whole } 8} = \frac{p}{360}$$

$$360 \times \frac{p}{360} = \frac{7}{8} \times 360$$

$$p = \frac{7}{8} \times 360$$

$$p = 315$$

$$18. \quad \frac{x}{190} = \frac{7}{15}$$

$$x = \frac{7}{15} \times 190$$

$$x = 88 \text{ (not quite 89)}$$

$$19. \quad t:m:s = 5:3:2$$

$$\frac{t}{5} = \frac{m}{3} = \frac{25}{2}$$

$$\frac{t}{5} = \frac{25}{2} \quad \frac{m}{3} = \frac{25}{2}$$

$$t = \frac{25}{2} \times 5 \quad m = \frac{25}{2} \times 3$$

$$t = 62.5 \text{ kg} \quad m = 37.5 \text{ kg}.$$

$$20) \quad \frac{1^{\text{st}} \text{ part}}{\text{whole}} = \frac{4}{5} \leftarrow 4+1$$

$$\frac{4}{5} = \frac{x}{40}$$

$$x = \frac{4}{5} \times 40$$

$$x = 32 \text{ m}.$$

Second part is
 $40 - 32$
 $= 8 \text{ m}.$

$$21. \quad \text{total parts } 21 + 23 + 26 + 30 = 100$$

$$\frac{21}{100} = \frac{x}{156000000}$$

$$x = \frac{21}{100} \times 156000000$$

$$x = 32760000$$

$$\frac{23}{100} = \frac{y}{156000000}$$

$$y = 23 \times 1560000$$

$$y = 35880000$$

$$z = 26 \times 1560000$$

$$z = 40560000$$

$$w = 30 \times 1560000$$

$$w = 46800000$$

∴ The children get \$32 760 000,
 \$35 880 000, \$40 560 000,
 and \$46 800 000.