

Exercise 22

1. (a) $\frac{1}{2}$ by $\frac{1}{3}$

$$= \frac{1}{2} \times \frac{3}{1} = \frac{3}{2}$$

(b) $\frac{1}{6}$ by $\frac{1}{3}$

$$= \frac{1}{6} \times \frac{3}{1} = \frac{1}{2}$$

(c) $\frac{2}{15}$ by $\frac{1}{15}$

$$= \frac{2}{15} \times \frac{15^1}{1} = \frac{2}{1} = 2$$

(d) $\frac{7}{18}$ by $\frac{1}{36}$

$$= \frac{1}{18} \div \frac{1}{36}$$

$$= \frac{1}{18} \times \frac{36^2}{1} = \frac{2}{1} = 2$$

(e) $\frac{1}{5}$ by $\frac{2}{25}$

$$= \frac{1}{5} \div \frac{2}{25}$$

$$= \frac{1}{5} \times \frac{25^5}{2} = \frac{5}{2}$$

(f) $\frac{7}{9}$ by $\frac{28}{45}$

$$= \frac{7}{9} \div \frac{28}{45}$$

$$= \frac{7}{9} \times \frac{45^5}{28} = \frac{5}{4}$$

(g) $\frac{11}{12}$ by $\frac{33}{24}$

$$= \frac{11}{12} \div \frac{33}{24}$$

$$= \frac{11}{12} \times \frac{24^2}{33^3}$$

$$= \frac{2}{3}$$

(h) $\frac{15}{16}$ by $\frac{75}{128}$

$$= \frac{15}{16} \div \frac{75}{128}$$

$$= \frac{15}{16} \times \frac{128^8}{75^5}$$

$$= \frac{8}{5}$$

$$2. (a) 3\frac{1}{4} \div \frac{1}{8}$$

$$= \frac{13}{4} \times \frac{8}{1}$$

$$= \frac{26}{1} = 26$$

$$(b) 5\frac{2}{8} \div \frac{1}{6}$$

$$= \frac{17}{8} \times \frac{6}{1}$$

$$= \frac{34}{1} = 34$$

$$(c) 16\frac{3}{5} \div \frac{1}{25}$$

$$= \frac{83}{5} \times \frac{25}{1}$$

$$= \frac{415}{1} = 415$$

$$(d) \frac{1}{5} \div 1\frac{1}{10}$$

$$= \frac{1}{5} \div \frac{11}{10}$$

$$= \frac{1}{5} \times \frac{10}{11} = \frac{2}{11}$$

$$(e) \frac{2}{7} \div 2\frac{3}{14}$$

$$= \frac{2}{7} \div \frac{31}{14}$$

$$= \frac{2}{7} \times \frac{14}{31} = \frac{4}{31}$$

$$(f) \frac{3}{8} \div 2\frac{3}{16}$$

$$= \frac{3}{8} \div \frac{35}{16}$$

$$= \frac{3}{8} \times \frac{16}{35} = \frac{6}{35}$$

$$(g) 6\frac{2}{3} \div 2\frac{2}{9}$$

$$= \frac{20}{3} \div \frac{20}{9}$$

$$= \frac{20}{3} \times \frac{9}{20} = \frac{3}{1} = 3$$

$$(h) 11\frac{2}{5} \div 3\frac{3}{4}$$

$$= \frac{57}{5} \div \frac{15}{4}$$

$$= \frac{57}{5} \times \frac{4}{15}$$

$$= \frac{76}{25}$$

$$(i) 6\frac{2}{3} \div 18\frac{1}{3}$$

$$= \frac{20}{3} \div \frac{40}{3}$$

$$= \frac{20}{3} \times \frac{3}{40} = \frac{1}{2}$$

$$3. (a) \frac{2}{3} \div 1$$

$$= \frac{2}{3} \times 1 = \frac{2}{3}$$

$$(b) \frac{6}{7} \div 1 = \frac{6}{7}$$

$$(c) 6 \div 1 = 6$$

$$(d) 0 \div \frac{1}{11} = 0$$

$$(e) 0 \div 6\frac{3}{11} = 0$$

$$(f) 0 \div 8\frac{7}{15} = 0$$

$$(g) \frac{3}{7} \div \frac{3}{7}$$

$$= \frac{3}{7} \times \frac{7}{3} = \frac{1}{1} = 1$$

$$(h) 6\frac{7}{14} \div \frac{91}{14} = 1$$

$$(i) 8\frac{9}{11} \div 8\frac{9}{11} = 1$$

$$4. (a) 2\frac{3}{7} \div 2\frac{3}{7} = 1 \quad \boxed{T}$$

$$\left(\frac{17}{7} \times \frac{7}{17} = \frac{1}{1} = 1\right)$$

$$(b) \frac{4}{9} \div \frac{5}{9} = \frac{4}{5} \quad \boxed{T}$$

$$\left(\frac{4}{9} \times \frac{9}{5} = \frac{4}{5}\right)$$

$$(c) 16\frac{2}{3} \div 8\frac{1}{3} = 2 \quad \boxed{T}$$

$$\left(\frac{50}{3} \times \frac{3}{25} = \frac{2}{1} = 2\right)$$