

BOOKLET 7 Year 9

Higher

Fractions Operations



Adding fractions with different denominators (lesson 1)

✘ $\frac{1}{6} + \frac{2}{9}$

$3 \cdot \frac{1}{6} + \frac{2 \cdot 2}{9 \cdot 2}$ Rewrite with a common denominator.
 Multiples of 6: 6, 12, **18**, 24 . . .
 Multiples of 9: 9, **18** . . .

$\frac{3}{18} + \frac{4}{18}$ Add the fractions (add the numerators, the denominator stays the same).

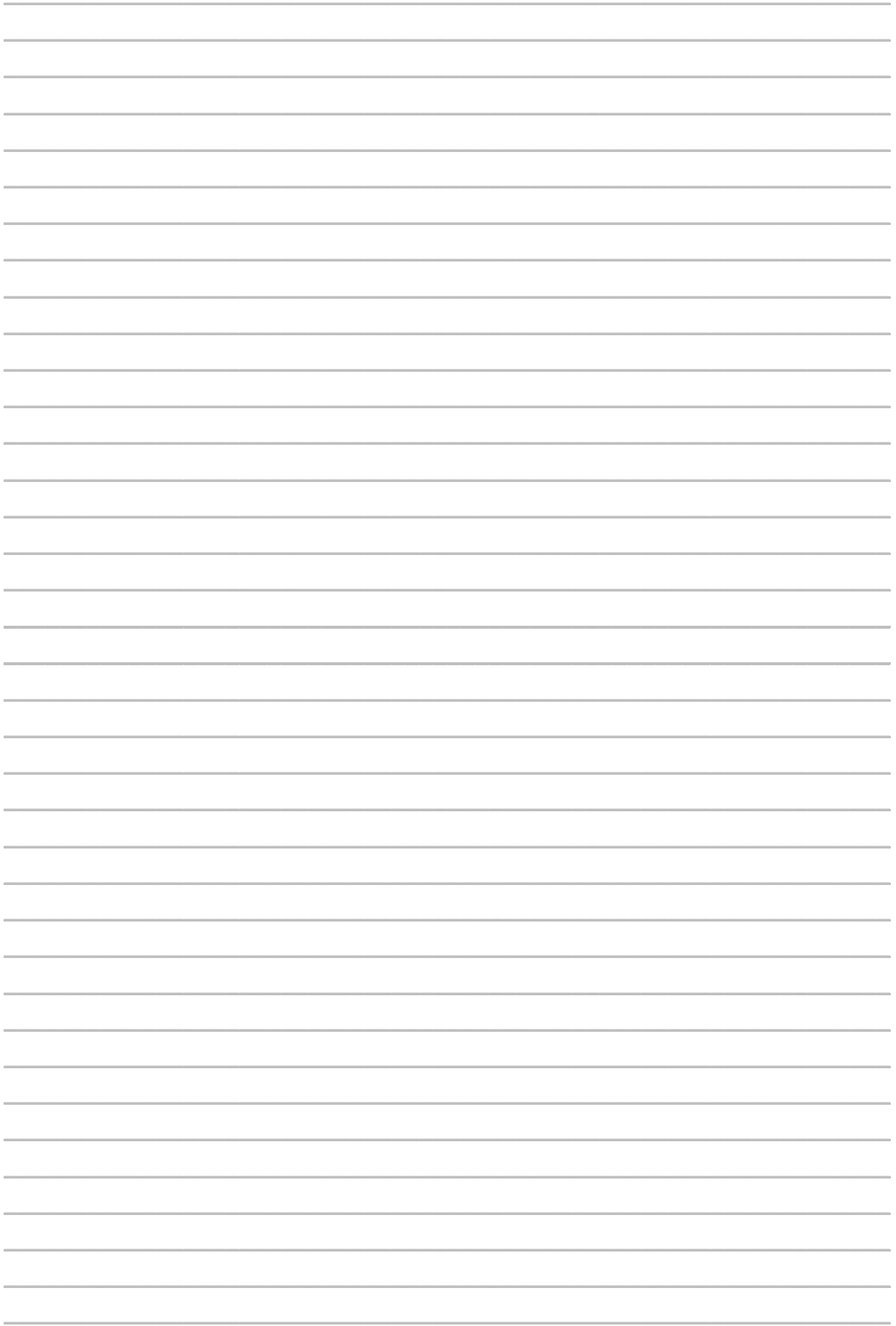
$\frac{7}{18}$

If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/21/fractions-addition-and-subtraction/>

Question 1: Work out the following additions and subtractions.
 Give your answers as simplified fractions.

- | | | | |
|-----------------------------------|----------------------------------|-----------------------------------|-------------------------------------|
| (a) $\frac{2}{5} + \frac{1}{2}$ | (b) $\frac{2}{7} + \frac{1}{2}$ | (c) $\frac{1}{3} + \frac{1}{2}$ | (d) $\frac{4}{5} - \frac{2}{3}$ |
| (e) $\frac{8}{9} - \frac{1}{3}$ | (f) $\frac{2}{3} + \frac{1}{6}$ | (g) $\frac{3}{10} + \frac{2}{5}$ | (h) $\frac{3}{8} + \frac{1}{4}$ |
| (i) $\frac{7}{15} - \frac{1}{5}$ | (j) $\frac{3}{4} - \frac{2}{5}$ | (k) $\frac{3}{10} + \frac{3}{8}$ | (l) $\frac{2}{5} + \frac{4}{7}$ |
| (m) $\frac{11}{15} - \frac{1}{6}$ | (n) $\frac{5}{11} + \frac{1}{4}$ | (o) $\frac{3}{14} + \frac{1}{3}$ | (p) $\frac{11}{13} - \frac{1}{2}$ |
| (q) $\frac{7}{20} + \frac{2}{5}$ | (r) $\frac{8}{9} - \frac{3}{5}$ | (s) $\frac{11}{18} + \frac{1}{6}$ | (t) $\frac{39}{100} - \frac{7}{20}$ |
| (u) $\frac{4}{15} + \frac{5}{12}$ | (v) $\frac{2}{3} - \frac{9}{16}$ | (w) $\frac{19}{30} + \frac{1}{8}$ | (x) $\frac{7}{12} + \frac{3}{14}$ |



Adding fractions with mixed number answers (lesson 2)

$$\frac{5}{3} + \frac{3}{4}$$

we need to find the common denominator of 3 and 4.

3, 6, 9, **12**, 15,.....

4, 8, **12**, 16, 20,.....

$$\frac{5}{3} = \frac{20}{12}$$

$$\frac{3}{4} = \frac{9}{12}$$

Change into 12

How many 12s go into 29?

$$\frac{29}{12} = 2 \frac{5}{12}$$

If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/21/fractions-addition-and-subtraction/>

Question 2: Work out the following additions.
 Give your answers as simplified fractions.
 If necessary, give any answers as mixed numbers.

(a) $\frac{3}{4} + \frac{1}{2}$

(b) $\frac{5}{9} + \frac{2}{3}$

(c) $\frac{7}{10} + \frac{1}{3}$

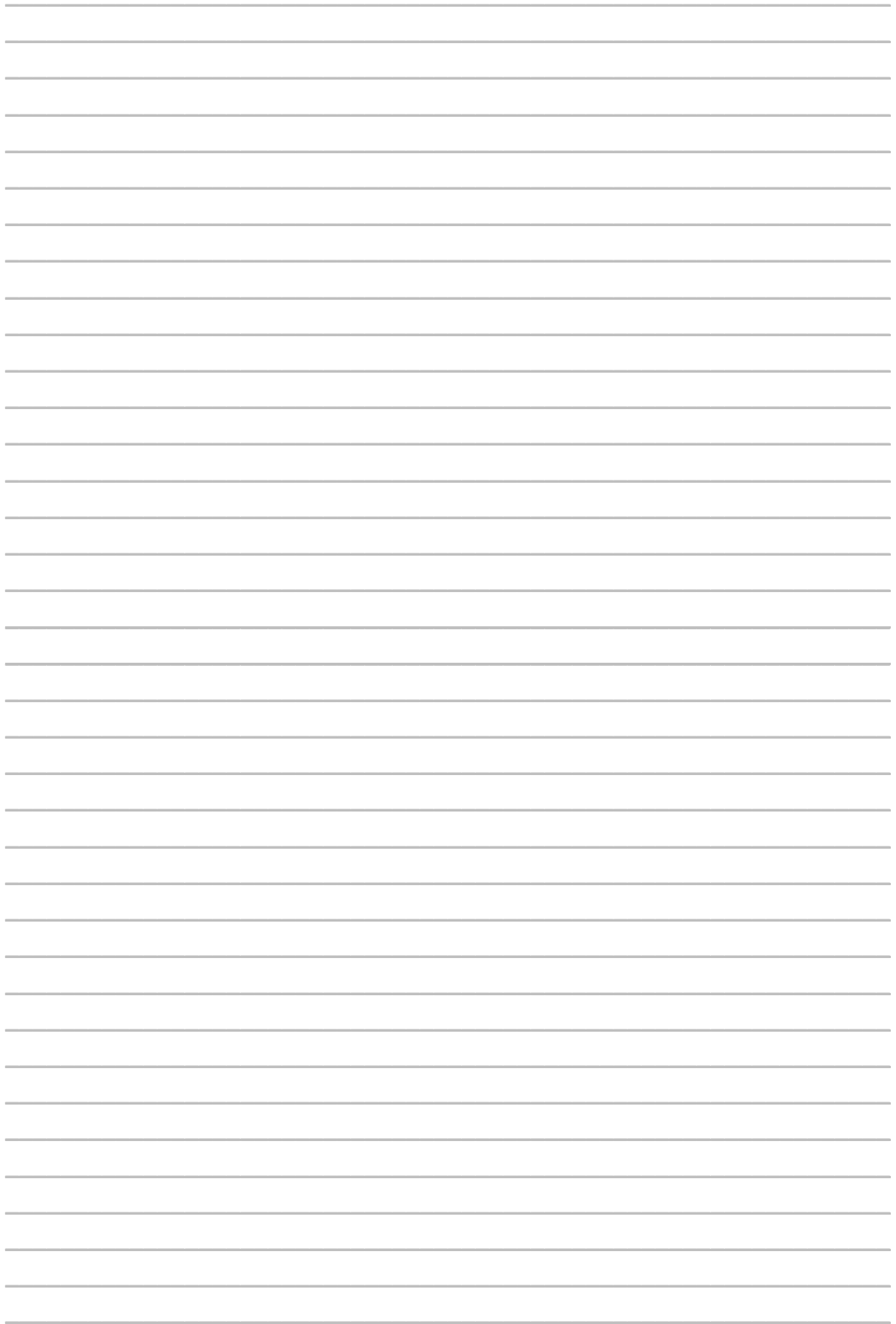
(d) $\frac{4}{5} + \frac{3}{4}$

(e) $\frac{19}{20} + \frac{4}{5}$

(f) $\frac{5}{9} + \frac{13}{18}$

(g) $\frac{5}{12} + \frac{9}{10}$

(h) $\frac{4}{7} + \frac{7}{8}$



Multiplying fractions (lesson 3)

Multiplying a fraction by a fraction

What is $\frac{3}{8} \times \frac{2}{5}$?

To multiply two fractions together, multiply the numerators together and multiply the denominators together:

$$\begin{aligned} \frac{3}{8} \times \frac{2}{5} &= \frac{\cancel{12}^3}{\cancel{40}_{10}} \\ &= \frac{3}{10} \end{aligned}$$

If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/21/multiplying-fractions-2/>

Question 1: Work out each of the following multiplications.
Give each answer in its simplest form.

(a) $\frac{1}{2} \times \frac{1}{5}$

(b) $\frac{1}{2} \times \frac{3}{4}$

(c) $\frac{1}{4} \times \frac{3}{5}$

(d) $\frac{1}{3} \times \frac{1}{3}$

(e) $\frac{5}{6} \times \frac{1}{2}$

(f) $\frac{3}{4} \times \frac{1}{4}$

(g) $\frac{2}{3} \times \frac{1}{7}$

(h) $\frac{5}{8} \times \frac{1}{3}$

(i) $\frac{2}{3} \times \frac{1}{2}$

(j) $\frac{1}{3} \times \frac{3}{4}$

(k) $\frac{3}{10} \times \frac{1}{2}$

(l) $\frac{2}{5} \times \frac{1}{4}$

(m) $\frac{2}{7} \times \frac{3}{4}$

(n) $\frac{5}{7} \times \frac{1}{10}$

(o) $\frac{7}{12} \times \frac{2}{3}$

(p) $\frac{6}{7} \times \frac{2}{3}$

(q) $\frac{6}{7} \times \frac{2}{9}$

(r) $\frac{3}{10} \times \frac{5}{6}$

(s) $\frac{6}{15} \times \frac{3}{4}$

(t) $\frac{3}{5} \times \frac{11}{15}$

(u) $\frac{9}{20} \times \frac{10}{11}$

(v) $\frac{21}{30} \times \frac{2}{3}$

(w) $\frac{12}{25} \times \frac{5}{8}$

(x) $\frac{8}{9} \times \frac{3}{16}$

Fraction Division (lesson 4)**Dividing a fraction by a fraction**

$$\text{What is } \frac{2}{3} \div \frac{4}{5} ?$$

To divide by a fraction we multiply by the denominator and divide by the numerator.

$$\frac{2}{3} \div \frac{4}{5} \text{ can be written as } \frac{2}{3} \times \frac{5}{4}$$

← Swap the numerator and the denominator and multiply.

$$\begin{aligned} \frac{2}{3} \times \frac{5}{4} &= \frac{10}{12} \\ &= \frac{5}{6} \end{aligned}$$

If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/21/division-with-fractions/>

Question 1: Work out the following divisions.

Give your answers as simplified fractions.

If any answers are top heavy fractions, write as mixed numbers.

(a) $\frac{1}{5} \div \frac{2}{3}$ (b) $\frac{3}{4} \div \frac{4}{5}$ (c) $\frac{1}{2} \div \frac{7}{8}$ (d) $\frac{2}{3} \div \frac{5}{6}$

(e) $\frac{1}{10} \div \frac{4}{9}$ (f) $\frac{6}{11} \div \frac{5}{6}$ (g) $\frac{2}{5} \div \frac{13}{15}$ (h) $\frac{3}{8} \div \frac{7}{9}$

(i) $\frac{3}{5} \div \frac{1}{2}$ (j) $\frac{7}{9} \div \frac{2}{3}$ (k) $\frac{8}{15} \div \frac{7}{10}$ (l) $\frac{9}{10} \div \frac{1}{3}$

(m) $\frac{5}{6} \div \frac{3}{4}$ (n) $\frac{13}{20} \div \frac{8}{11}$ (o) $\frac{4}{17} \div \frac{3}{16}$ (p) $\frac{5}{7} \div \frac{10}{19}$

Lesson 1 Answers

Question 1:

(a) $\frac{9}{10}$

(b) $\frac{11}{14}$

(c) $\frac{5}{6}$

(d) $\frac{2}{15}$

(e) $\frac{5}{9}$

(f) $\frac{5}{6}$

(g) $\frac{7}{10}$

(h) $\frac{5}{8}$

(i) $\frac{4}{15}$

(j) $\frac{7}{20}$

(k) $\frac{27}{40}$

(l) $\frac{34}{35}$

(m) $\frac{17}{30}$

(n) $\frac{31}{44}$

(o) $\frac{23}{42}$

(p) $\frac{9}{26}$

(q) $\frac{3}{4}$

(r) $\frac{13}{45}$

(s) $\frac{7}{9}$

(t) $\frac{1}{25}$

(u) $\frac{41}{60}$

(v) $\frac{5}{48}$

(w) $\frac{91}{120}$

(x) $\frac{67}{84}$

Lesson 2 Answers

Question 2:

(a) $1\frac{1}{4}$

(b) $1\frac{2}{9}$

(c) $1\frac{1}{30}$

(d) $1\frac{11}{20}$

(e) $1\frac{3}{4}$

(f) $1\frac{5}{18}$

(g) $1\frac{19}{60}$

(h) $1\frac{25}{56}$

Question 3:

(a) $\frac{5}{12}$

(b) $\frac{1}{2}$

(c) $1\frac{1}{8}$

(d) $1\frac{3}{4}$

Lesson 3 Answers

Question 1:

(a) $\frac{1}{10}$

(b) $\frac{3}{8}$

(c) $\frac{3}{20}$

(d) $\frac{1}{9}$

(e) $\frac{5}{12}$

(f) $\frac{3}{16}$

(g) $\frac{2}{21}$

(h) $\frac{5}{24}$

(i) $\frac{1}{3}$

(j) $\frac{1}{4}$

(k) $\frac{3}{20}$

(l) $\frac{1}{10}$

(m) $\frac{3}{14}$

(n) $\frac{1}{14}$

(o) $\frac{7}{18}$

(p) $\frac{4}{7}$

(q) $\frac{4}{21}$

(r) $\frac{1}{4}$

(s) $\frac{3}{10}$

(t) $\frac{11}{25}$

(u) $\frac{9}{22}$

(v) $\frac{7}{15}$

(w) $\frac{3}{10}$

(x) $\frac{1}{6}$

Question 2:

(a) $\frac{3}{5}$

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

(c) $\frac{2}{5}$

(d) 15

(e) 6

(f) 8

(g) $1\frac{2}{3}$

(h) $3\frac{1}{5}$

(i) 16

(j) $2\frac{2}{7}$

(k) 10

(l) 72

Question 3:

(a) $\frac{5}{12}$

(b) $\frac{1}{2}$

(c) $1\frac{1}{8}$

(d) $1\frac{3}{4}$

(e) $\frac{5}{6}$

(f) $2\frac{1}{12}$

(g) $7\frac{2}{3}$

(h) $1\frac{5}{99}$

(i) $6\frac{7}{20}$

(j) $3\frac{2}{3}$

(k) $7\frac{13}{16}$

(l) $9\frac{1}{7}$

Lesson 4 Answers

Question 1:

(a) $\frac{3}{10}$

(b) $\frac{15}{16}$

(c) $\frac{4}{7}$

(d) $\frac{4}{5}$

(e) $\frac{9}{40}$

(f) $\frac{36}{55}$

(g) $\frac{6}{13}$

(h) $\frac{27}{56}$

(i) $1\frac{1}{5}$

(j) $1\frac{1}{6}$

(k) $\frac{16}{21}$

(l) $2\frac{7}{10}$

(m) $1\frac{1}{9}$

(n) $\frac{143}{160}$

(o) $1\frac{13}{51}$

(p) $1\frac{5}{14}$

Question 2:

(a) $\frac{3}{8}$

(b) $\frac{1}{14}$

(c) $\frac{11}{60}$

(d) $\frac{9}{200}$

(e) 6

(f) $2\frac{2}{3}$

(g) 18

(h) $22\frac{1}{2}$

Question 3:

(a) $\frac{10}{27}$

(b) $\frac{15}{19}$

(c) $4\frac{6}{7}$

(d) $\frac{14}{33}$