1 Work out the missing numbers.

a) $\dfrac{3}{8} + \boxed{} = \dfrac{5}{8}$

c) $3 + \boxed{} = 3\dfrac{3}{4}$

b) $\boxed{} + \dfrac{1}{4} = \dfrac{3}{4}$

d) $5 - \boxed{} = 4\dfrac{5}{6}$

2 Solve the equations.

a) $x + 3 = 5$

c) $x - 3 = 5\dfrac{1}{3}$

b) $x + 3 = 5\dfrac{1}{3}$

d) $6\dfrac{1}{3} = x - 3$

3 If $s = 2$, work out the value of these expressions.

Give your answers as mixed numbers.

a) $\dfrac{1}{s} + \dfrac{3}{s^2}$

b) $\dfrac{7}{s^2} - \dfrac{2}{s}$

c) $\dfrac{1}{s} + \dfrac{1}{s} + \dfrac{2}{s} + 5\dfrac{1}{7}$

4 Substitute the values $g = 4$ and $h = 3$ into the expressions.

Give your answers as improper fractions.

a) $g + \dfrac{1}{g}$ $\qquad\qquad\qquad$ $h + \dfrac{1}{h}$

What do you notice about the answers?

b) $1 + \dfrac{g}{h}$ $\qquad\qquad\qquad$ $1 + \dfrac{h}{g}$

Which answer was greater? Will this be true for any values of g and h?

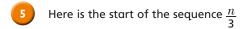**c)** $g - \dfrac{g}{h}$ $\qquad\qquad\qquad$ $h - \dfrac{h}{g}$

No values of g and h will ever give a negative answer.

Do you agree with Dexter?

Talk about it with a partner.

5 Here is the start of the sequence $\dfrac{n}{3}$

$\dfrac{1}{3}$, $\dfrac{2}{3}$, $\dfrac{3}{3}$, $\dfrac{4}{3}$

a) Write the next four terms of the sequence.

b) How many of the terms in part a) are whole numbers?

c) Which term will produce $5\dfrac{2}{3}$?

d) How many terms out of the first 100 terms will be integers?

e) How often will the sequence $\dfrac{2n}{3}$ produce integers?

Show your working.

f) How often will the sequence $\dfrac{3n}{n}$ produce integers?

Show your working.

6 Solve the equations.

a) $x + \dfrac{2}{3} - \dfrac{5}{6} = 0$

c) $\dfrac{16}{7} - \dfrac{12}{56} = x + 2\dfrac{1}{2}$

b) $\dfrac{5}{2} = x + \dfrac{1}{5}$

d) $\dfrac{300}{7} + x - \dfrac{1}{3} = \dfrac{586}{14} + \dfrac{4}{6}$