Add and subtract simple algebraic fractions
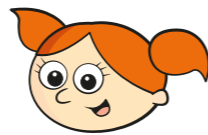
H

1 Work out the calculations.

a) $\dfrac{1}{3} + \dfrac{1}{3} = \boxed{}$ $\dfrac{1}{29} + \dfrac{1}{29} = \boxed{}$

$\dfrac{1}{15} + \dfrac{1}{15} = \boxed{}$ $\dfrac{1}{x} + \dfrac{1}{x} = \boxed{}$

b)

> To double a fraction you just double the numerator.

Do you agree with Alex? _____

Explain your answer.

2 Work out the calculations.

a) $\dfrac{1}{5} + \dfrac{1}{5} = \boxed{}$ **b)** $\dfrac{1}{2} + \dfrac{1}{4} = \boxed{}$

$\dfrac{6}{5} + \dfrac{6}{5} = \boxed{}$ $\dfrac{1}{5} + \dfrac{1}{10} = \boxed{}$

$\dfrac{29}{5} + \dfrac{29}{5} = \boxed{}$ $\dfrac{1}{29} + \dfrac{1}{58} = \boxed{}$

$\dfrac{x}{5} + \dfrac{x}{5} = \boxed{}$ $\dfrac{1}{x} + \dfrac{1}{2x} = \boxed{}$

3 Annie is calculating with algebraic fractions.

> I can work out $\dfrac{1}{k} + \dfrac{1}{k}$ because the denominator is the same, so $\dfrac{1}{k} + \dfrac{1}{k} = \dfrac{1+1}{k} = \dfrac{2}{k}$

Use Annie's method to complete the calculations.

a) $\dfrac{3}{m} + \dfrac{4}{m} = \boxed{}$ **c)** $\dfrac{1}{p} - \dfrac{4}{p} = \boxed{}$

b) $\dfrac{12}{n} - \dfrac{5}{n} = \boxed{}$

4 Here is an algebraic expression.

$$\frac{4}{r} + \frac{2}{r}$$

a) Write the expression as a single fraction. $\boxed{}$

b) Evaluate the expression when $r = 2$ $\boxed{}$

c) For what value of r is $\dfrac{4}{r} + \dfrac{2}{r} > 1$? $\boxed{}$

Is there more than one answer?

5 Simplify the expressions.

a) $\dfrac{1}{x} + \dfrac{1}{3x} = \boxed{}$

b) $\dfrac{2}{x} - \dfrac{3}{5x} = \boxed{}$

Discuss your method with a partner.

6 The number line shows 0 and x.

0   x
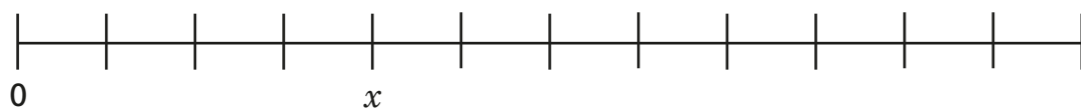
Position the expressions on the number line.

Write a simplified fraction where required.

a) $2x$

c) $\dfrac{x}{4}$

e) $2x - \dfrac{3x}{4} = \boxed{}$

b) $\dfrac{x}{2}$

d) $\dfrac{x}{2} + \dfrac{x}{4} = \boxed{}$

f) $x + \dfrac{x}{2} = \boxed{}$

7 a) A sequence starts at zero and goes up by $\dfrac{a}{5}$ each term.

Write the first five terms of the sequence.

_____

b) Another sequence starts at zero and goes up by $\dfrac{2a}{5}$ each term.

Write the first five terms of this sequence.

_____

8 Simplify the expressions using equivalent fractions.

a) $\dfrac{x}{2} + \dfrac{x}{3} = \boxed{}$

b) $\dfrac{2x}{3} - \dfrac{x}{2} = \boxed{}$

9 Solve the equations. Show all of your working.

a) $\dfrac{1}{x} + \dfrac{3}{x} = 1$

$x = \boxed{}$

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

$y = \boxed{}$

c) $\dfrac{11}{z} - \dfrac{9}{2z} = 1$

$z = \boxed{}$

10 How would you simplify these expressions?

$\boxed{\dfrac{3}{2x} + \dfrac{1}{3x}}$ $\boxed{\dfrac{1}{t} + \dfrac{1}{2t} + \dfrac{1}{3t}}$