Solving algebraic fractions (equal to $x + a$)

Mr Lund
Maths

Solving algebraic fractions (equal to x + a)

1. Here are two equations.

$\frac{2a}{3} = 10$

$\frac{2a}{3} = a + 10$

What's the same, what's different?

2. Solve the equations.

a) $\frac{3a}{2} = a + 3$

b) $b - 2 = \frac{2b}{3}$

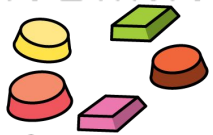
c) $c + 12 = \frac{5c}{2}$

d) $\frac{4d}{5} = d - 3$

3. Mo and Dora have some sweets.

Mo says, 'Dora, I have $\frac{4m}{3}$ sweets.'

Dora replies, 'Mo, you have 2 more sweets than me'.



a) Use the statements to form an equation.

b) Solve to find how many sweets Mo and Dora have.

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4. Solve the equations.

a) $\frac{4e}{3} = e - 1$

b) $f - 1 = \frac{3f}{5}$

c) $g + 3 = \frac{5g}{3}$

d) $\frac{3h}{8} = h + 1$

5. Two friends are solving $\frac{3k}{4} + 5 = k + 3$

Rosie

$3k + 20 = 4(k + 3)$

Jack

$\frac{3k}{4} = k - 2$

Compare their first steps.
Who has the most efficient method?

6. Solve the equations.

a) $\frac{2p}{3} + 7 = p + 4$

b) $\frac{7q}{4} - 5 = q + 1$

c) $r - 3 = \frac{5r}{8} - 6$

d) $s + 8 = 6 + \frac{9s}{5}$

Answers

Solving algebraic fractions (equal to x + a)

1. Here are two equations.

$\frac{2a}{3} = 10$ $\frac{2a}{3} = a + 10$

Same expression on the left of each equation.
There is a variable on both sides of the equation on the right.

What's the same, what's different?

2. Solve the equations.

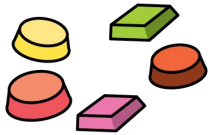
a) $\frac{3a}{2} = a + 3$ a = 6 b) $b - 2 = \frac{2b}{3}$ b = 6

c) $c + 12 = \frac{5c}{2}$ c = 8 d) $\frac{4d}{5} = d - 3$ c = 15

3. Mo and Dora have some sweets.

Mo says, 'Dora, I have $\frac{4m}{3}$ sweets.'

Dora replies, 'Mo, you have 2 more sweets than me'.



a) Use the statements to form an equation.

$\frac{4m}{3} = m + 2$

b) Solve to find how many sweets Mo and Dora have.

Mo has 8 sweets
Dora has 6 sweets

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4. Solve the equations.

a) $\frac{4e}{3} = e - 1$ $e = -3$ b) $f - 1 = \frac{3f}{5}$ $f = \frac{5}{2}$ or 2.5

c) $g + 3 = \frac{5g}{3}$ $g = 4.5$ d) $\frac{3h}{8} = h + 1$ $h = -1.6$

5. Two friends are solving $\frac{3k}{4} + 5 = k + 3$

Rosie

$3k + 20 = 4(k + 3)$

Jack

$\frac{3k}{4} = k - 2$

Compare their first steps.
Who has the most efficient method?

Jack has one less step to make to solve the equation.

6. Solve the equations.

a) $\frac{2p}{3} + 7 = p + 4$ $p = 9$

b) $\frac{7q}{4} - 5 = q + 1$ $q = 8$

c) $r - 3 = \frac{5r}{8} - 6$ $r = -8$

d) $s + 8 = 6 + \frac{9s}{5}$ $s = 2.5$