Multiply and divide algebraic fractions

H

1 **a)** Work out $7 \times \frac{1}{2} =$ $\frac{7}{2}$

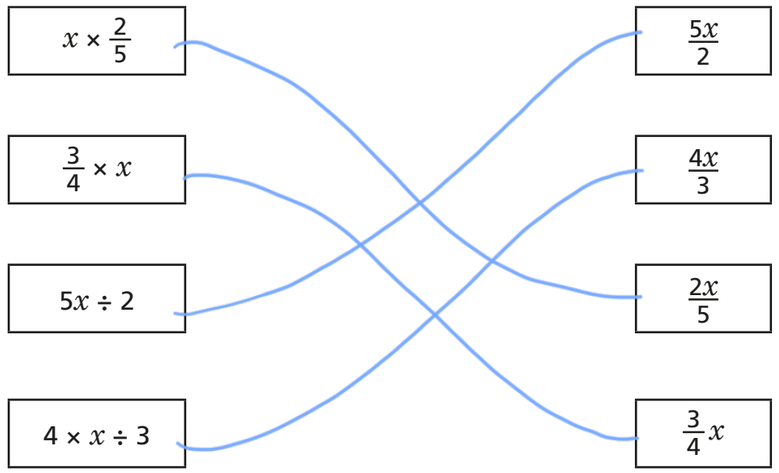
b) Work out $x \times \frac{1}{2} =$ $\frac{x}{2}$

c) Substitute $x = 7$ into your answer to part b).

$\frac{7}{2}$

d) What do you notice about your answers to a) and c)?

2 Match each expression to a simplified version.



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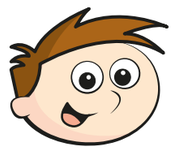
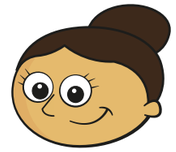


Teddy

$\frac{3}{4}x$ and $\frac{3x}{4}$ are exactly the same fraction.

No they're not, the numbers and letters are arranged differently.



Dora

Work out $\frac{3}{4}x$ and $\frac{3x}{4}$ using the given values of x.

a) $x = 2$

$\frac{3}{4}x = \frac{3}{4} \times 2 =$ $1\frac{1}{2}$ $\qquad \frac{3x}{4} = \frac{3 \times 2}{4} =$ $1\frac{1}{2}$

b) $x = 3$

$\frac{3}{4}x =$ $2\frac{1}{4}$ $\qquad \frac{3x}{4} =$ $2\frac{1}{4}$

c) $x = 10$

$\frac{3}{4}x =$ $7\frac{1}{2}$ $\qquad \frac{3x}{4} =$ $7\frac{1}{2}$

Do you agree with Teddy or Dora? Teddy

Explain why.

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4 Simplify the calculations.

a) $x \times \frac{1}{3} =$ $\frac{x}{3}$

b) $\frac{4}{5} \times y =$ $\frac{4y}{5}$

c) $\frac{1}{5} \times z \times 3 =$ $\frac{3z}{5}$

d) $\frac{x}{2} \times \frac{1}{3} =$ $\frac{x}{6}$

e) $\frac{y}{5} \times \frac{2}{3} =$ $\frac{2y}{15}$

f) $\frac{3}{5} \times \frac{z}{2} \times 4 =$ $\frac{6z}{5}$

5 Circle the expression in each set that is **not** equivalent to the others.

a) $\frac{2a}{5}$ $a \times 2 \div 5$ $\frac{a \times 2}{5}$ $a \div 2 \times 5$

b) $\frac{2a}{3}$ $a \times \frac{2}{3}$ $a \div 2 \times 3$ $a \div 3 \times 2$

6 Complete the calculations.

a) $\frac{w}{7} \div 2 =$ $\frac{w}{14}$

b) $\frac{3}{w} \div 2 =$ $\frac{3}{2w}$

c) $\frac{3}{w} \div w =$ $\frac{3}{w^2}$

d) $\frac{w}{5} \div 2w =$ $\frac{1}{10}$

7 Simplify the expressions.

a) $\frac{a}{5} \times \frac{b}{3} =$ $\frac{ab}{15}$

b) $\frac{a}{5} \times \frac{3}{b} =$ $\frac{3a}{5b}$

c) $\frac{a}{5} \div \frac{b}{3} =$ $\frac{3a}{5b}$

d) $\frac{a}{5} \div \frac{3}{b} =$ $\frac{ab}{15}$

e) $\frac{a}{4} \times \frac{b}{2} =$ $\frac{ab}{8}$

f) $\frac{2}{b} \times \frac{a}{4} =$ $\frac{a}{2b}$

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