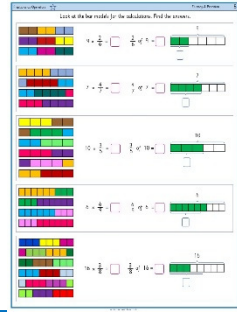


★ Fractions as Operators

Children link their understanding of fractions of amounts and multiplying fractions to use fractions as operators. They use their knowledge of commutativity to help them understand that you can change the order of multiplication without changing the product.

On this sheet, they will consider fractions as operators using given bar models.

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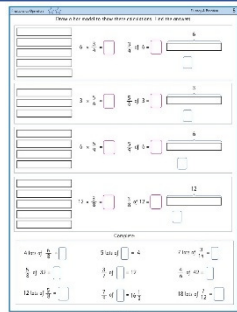


★★ Fractions as Operators

Children link their understanding of fractions of amounts and multiplying fractions to use fractions as operators. They use their knowledge of commutativity to help them understand that you can change the order of multiplication without changing the product.

On this sheet, they will complete their own bar models to complete fractions as operators.

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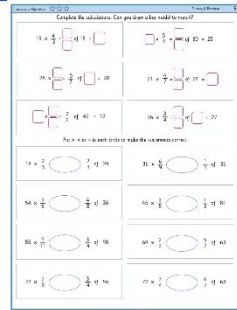


★★★ Fractions as Operators

Children link their understanding of fractions of amounts and multiplying fractions to use fractions as operators. They use their knowledge of commutativity to help them understand that you can change the order of multiplication without changing the product.

On this sheet, they will use both methods when completing necessary calculations.

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Reasoning & Problem Solving

Fractions as Operators

Children continue working on their understanding of fractions as operators.

They can show their understanding by solving reasoning tasks.

Fractions as Operators Reasoning & Problem Solving 5

Which method would you use to complete these calculations: multiply the fractions or find the fraction of an amount?
Explain your choice for each one.
Compare your method to your partner.

$18 \times \frac{2}{6}$ or $\frac{2}{6}$ of 18

$24 \times \frac{3}{8}$ or $\frac{3}{8}$ of 24

$15 \times \frac{4}{5}$ or $\frac{4}{5}$ of 15

Dexter and Jack are thinking of a two-digit number between 30 and 40.

Dexter finds three quarters of the number.

Jack multiplies the number by $\frac{3}{4}$.

Their new two-digit number has a digit total that is one more than that of their original number.

What number did they start with?
Show each step of their calculation.

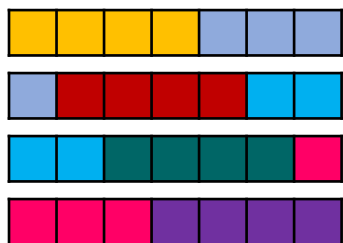
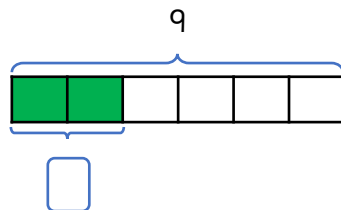


Look at the bar models for the calculations. Find the answers.



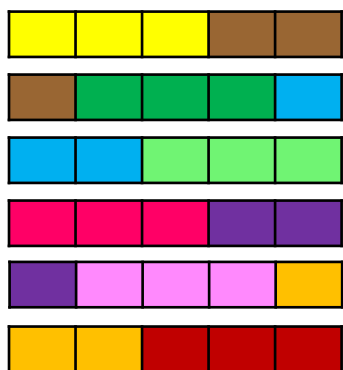
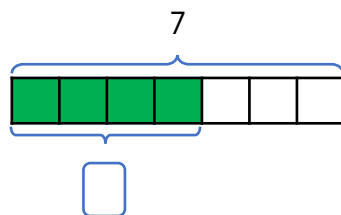
$9 \times \frac{2}{6} = \square$

$\frac{2}{6} \text{ of } 9 = \square$



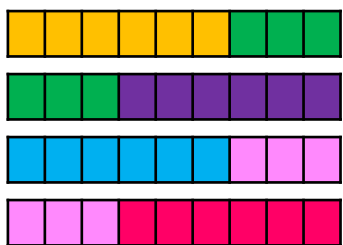
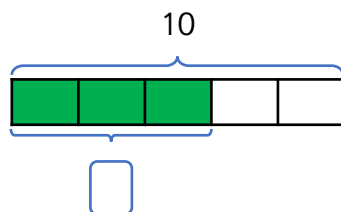
$7 \times \frac{4}{7} = \square$

$\frac{4}{7} \text{ of } 7 = \square$



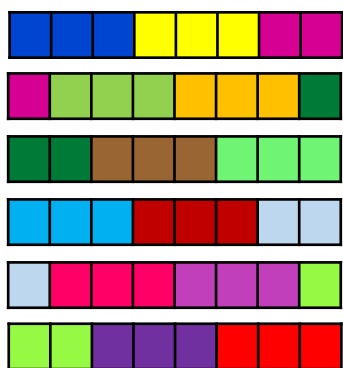
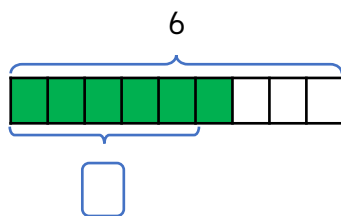
$10 \times \frac{3}{5} = \square$

$\frac{3}{5} \text{ of } 10 = \square$



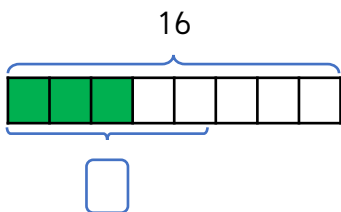
$6 \times \frac{6}{9} = \square$

$\frac{6}{9} \text{ of } 6 = \square$



$16 \times \frac{3}{8} = \square$

$\frac{3}{8} \text{ of } 16 = \square$



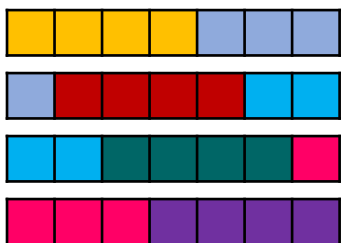
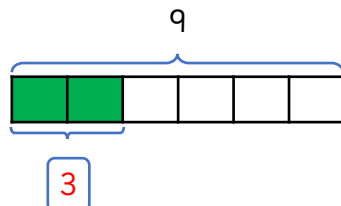


Look at the bar models for the calculations. Find the answers.



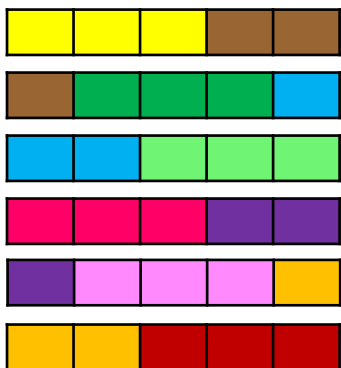
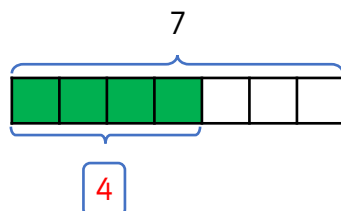
$$9 \times \frac{2}{6} = \boxed{3}$$

$$\frac{2}{6} \text{ of } 9 = \boxed{3}$$



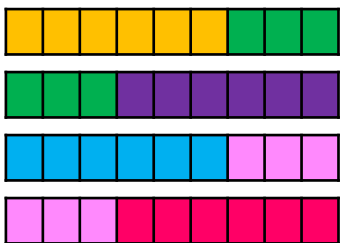
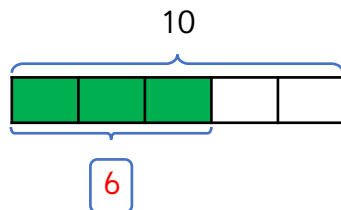
$$7 \times \frac{4}{7} = \boxed{4}$$

$$\frac{4}{7} \text{ of } 7 = \boxed{4}$$



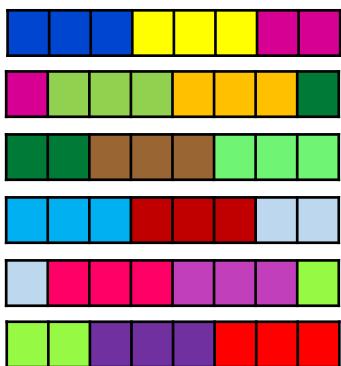
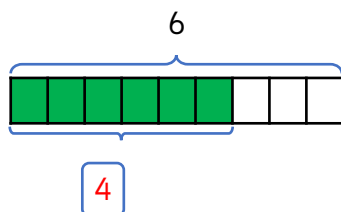
$$10 \times \frac{3}{5} = \boxed{6}$$

$$\frac{3}{5} \text{ of } 10 = \boxed{6}$$



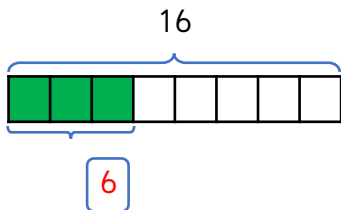
$$6 \times \frac{6}{9} = \boxed{4}$$

$$\frac{6}{9} \text{ of } 6 = \boxed{4}$$



$$16 \times \frac{3}{8} = \boxed{6}$$

$$\frac{3}{8} \text{ of } 16 = \boxed{6}$$





Draw a bar model to show these calculations. Find the answers.

$6 \times \frac{3}{4} = \square$

$\frac{3}{4}$ of 6 = \square

$3 \times \frac{5}{6} = \square$

$\frac{5}{6}$ of 3 = \square

$6 \times \frac{5}{9} = \square$

$\frac{5}{9}$ of 6 = \square

$12 \times \frac{3}{8} = \square$

$\frac{3}{8}$ of 12 = \square

Complete:

$4 \text{ lots of } \frac{6}{8} = \square$

$5 \text{ lots of } \square = 4$

$7 \text{ lots of } \frac{3}{14} = \square$

$\frac{5}{8} \text{ of } 32 = \square$

$\frac{3}{7} \text{ of } \square = 12$

$\frac{4}{6} \text{ of } 42 = \square$

$12 \text{ lots of } \frac{5}{8} = \square$

$\frac{7}{9} \text{ of } \square = 16\frac{1}{3}$

$18 \text{ lots of } \frac{7}{12} = \square$



Draw a bar model to show these calculations. Find the answers.

$6 \times \frac{3}{4} = 4\frac{1}{2}$ $\frac{3}{4}$ of 6 = $4\frac{1}{2}$

$3 \times \frac{5}{6} = 2\frac{1}{2}$ $\frac{5}{6}$ of 3 = $2\frac{1}{2}$

$6 \times \frac{5}{9} = 3\frac{1}{3}$ $\frac{5}{9}$ of 6 = $3\frac{1}{3}$

$12 \times \frac{3}{8} = 4\frac{1}{2}$ $\frac{3}{8}$ of 12 = $4\frac{1}{2}$

Complete:

$4 \text{ lots of } \frac{6}{8} = 3$ $5 \text{ lots of } \frac{8}{10} = 4$ $7 \text{ lots of } \frac{3}{14} = 1\frac{1}{2}$

$\frac{5}{8} \text{ of } 32 = 20$ $\frac{3}{7} \text{ of } 28 = 12$ $\frac{4}{6} \text{ of } 42 = 28$

$12 \text{ lots of } \frac{5}{8} = 7\frac{1}{2}$ $\frac{7}{9} \text{ of } 21 = 16\frac{1}{3}$ $18 \text{ lots of } \frac{7}{12} = 10\frac{1}{2}$



Complete the calculations. Can you draw a bar model to match?

$$15 \times \frac{4}{3} = \frac{\square}{\square} \text{ of } 15 = \square$$

$$\square \times \frac{5}{6} = \frac{\square}{\square} \text{ of } 30 = 25$$

$$28 \times \frac{\square}{\square} = \frac{5}{7} \text{ of } \square = 20$$

$$21 \times \frac{4}{7} = \frac{\square}{\square} \text{ of } 21 = \square$$

$$\square \times \frac{\square}{\square} = \frac{2}{7} \text{ of } 42 = 12$$

$$36 \times \frac{3}{4} = \frac{\square}{\square} \text{ of } \square = 27$$

Put >, < or = in each circle to make the statements correct.

$$18 \times \frac{2}{3} \quad \bigcirc \quad \frac{2}{3} \text{ of } 24$$

$$36 \times \frac{6}{9} \quad \bigcirc \quad \frac{1}{3} \text{ of } 36$$

$$54 \times \frac{2}{6} \quad \bigcirc \quad \frac{4}{8} \text{ of } 36$$

$$45 \times \frac{3}{5} \quad \bigcirc \quad \frac{1}{3} \text{ of } 81$$

$$55 \times \frac{9}{11} \quad \bigcirc \quad \frac{3}{4} \text{ of } 90$$

$$69 \times \frac{2}{3} \quad \bigcirc \quad \frac{5}{7} \text{ of } 63$$

$$72 \times \frac{7}{8} \quad \bigcirc \quad \frac{3}{4} \text{ of } 56$$

$$72 \times \frac{3}{4} \quad \bigcirc \quad \frac{6}{7} \text{ of } 63$$



Complete the calculations. Can you draw a bar model to match?

$$15 \times \frac{4}{3} = \frac{\boxed{4}}{\boxed{3}} \text{ of } 15 = \boxed{20}$$

$$\boxed{30} \times \frac{5}{6} = \frac{\boxed{5}}{\boxed{6}} \text{ of } 30 = 25$$

$$28 \times \frac{\boxed{5}}{\boxed{7}} = \frac{5}{7} \text{ of } \boxed{28} = 20$$

$$21 \times \frac{4}{7} = \frac{\boxed{4}}{\boxed{7}} \text{ of } 21 = \boxed{12}$$

$$\boxed{42} \times \frac{\boxed{2}}{\boxed{7}} = \frac{2}{7} \text{ of } 42 = 12$$

$$36 \times \frac{3}{4} = \frac{\boxed{3}}{\boxed{4}} \text{ of } \boxed{36} = 27$$

Put >, < or = in each circle to make the statements correct.

$$18 \times \frac{2}{3} \quad \text{<} \quad \frac{2}{3} \text{ of } 24$$

$$36 \times \frac{6}{9} \quad \text{>} \quad \frac{1}{3} \text{ of } 36$$

$$54 \times \frac{2}{6} \quad \text{=} \quad \frac{4}{8} \text{ of } 36$$

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$$72 \times \frac{3}{4} \quad \text{=} \quad \frac{6}{7} \text{ of } 63$$

Which method would you use to complete these calculations: multiply the fractions or find the fraction of an amount?

Explain your choice for each one.
Compare your method to your partner.

$$18 \times \frac{2}{6} \quad \text{or} \quad \frac{2}{6} \text{ of } 18$$

$$24 \times \frac{3}{8} \quad \text{or} \quad \frac{3}{8} \text{ of } 24$$

$$15 \times \frac{4}{5} \quad \text{or} \quad \frac{4}{5} \text{ of } 15$$



Dexter and Jack are thinking of a two-digit number between 30 and 40.

Dexter finds three quarters of the number.

Jack multiplies the number by $\frac{3}{4}$

Their new two-digit number has a digit total that is one more than that of their original number.

What number did they start with?

Show each step of their calculation.

Which method would you use to complete these calculations: multiply the fractions or find the fraction of an amount?

Explain your choice for each one.
Compare your method to your partner.

$$18 \times \frac{2}{6} \quad \text{or} \quad \frac{2}{6} \text{ of } 18$$

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$$18 \times \frac{2}{6} \quad \text{or} \quad \frac{2}{6} \text{ of } 18$$

$$8 \times \frac{3}{4} \quad \text{or} \quad \frac{3}{4} \text{ of } 8$$

$$16 \times \frac{4}{5} \quad \text{or} \quad \frac{4}{5} \text{ of } 16$$

Possible response:

1. Children may find it easier to find 2 sixths of 18 rather than multiply 18 by 2.
2. Children may choose either as they are of similar efficiency.
3. Children will probably find it more efficient to multiply than divide 16 by 5.



Dexter and Jack are thinking of a two-digit number between 30 and 40.

Dexter finds three quarters of the number.

Jack multiplies the number by $\frac{3}{4}$

Their new two-digit number has a digit total that is one more than that of their original number.

What number did they start with?

Show each step of their calculation.

They started with 32.

Dexter: $32 \div 4 = 8$ $8 \times 3 = 24$.

Jack: $32 \times 3 = 96$ $96 \div 4 = 24$.

Which method would you use to complete these calculations: multiply the fractions or find the fraction of an amount?

Explain your choice for each one.

Compare your method to your partner.

$$18 \times \frac{2}{6} \quad \text{or} \quad \frac{2}{6} \text{ of } 18$$

$$8 \times \frac{3}{4} \quad \text{or} \quad \frac{3}{4} \text{ of } 8$$

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Dexter: $32 \div 4 = 8$ $8 \times 3 = 24$.

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