Merit Tutoring

WORKSHEET 21

Year 6 Mathematics: Fractions, Decimals & Percentages

Multiplying Fractions

Focus: Fractions of a Quantity

Name: _____ **Date:** _____

Understanding "Of" means "Multiply"

Finding a Fraction of a Quantity:
When we say "$\frac{1}{3}$ of 12", we mean $\frac{1}{3} \times 12$.

Method 1: Divide then Multiply

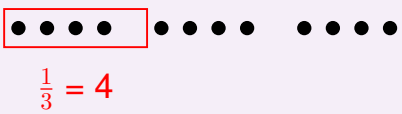
- To find $\frac{1}{4}$ of 20: Divide 20 by 4 = 5
- To find $\frac{3}{4}$ of 20: Find $\frac{1}{4}$ first (= 5), then multiply by 3 = 15

Method 2: Use Division

$$\frac{1}{3} \text{ of } 15 = 15 \div 3 = 5$$

$$\frac{2}{3} \text{ of } 15 = (15 \div 3) \times 2 = 5 \times 2 = 10$$

Visual Example: $\frac{1}{3}$ of 12



$\frac{1}{3}$ = 4

Section 1: Basic Calculations (Fluency)

1. Calculate: $\frac{1}{2}$ of 20

Answer: _____

2. Calculate: $\frac{1}{4}$ of 16

Answer: _____

3. Calculate: $\frac{1}{3} \times 9$

Answer: _____

4. Find $\frac{1}{5}$ of 25

Answer: _____

5. Calculate: $\frac{1}{10}$ of 40

Answer: _____

6. Find $\frac{1}{2}$ of 18

Answer: _____

FRACTION FACTORY!

Pizza Chef

Why did the fraction go to the bakery?

To get a piece of the pie!

Section 2: Multi-Step Problems (Reasoning)

7. To find $\frac{1}{5}$ of 30, you divide 30 by 5. What is the answer?

Answer: _____

8. Calculate $\frac{2}{3}$ of 18.
(Hint: Find $\frac{1}{3}$ first, then multiply by 2)

Answer: _____

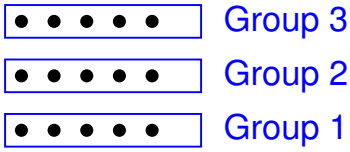
9. Find $\frac{3}{4}$ of 24.

Answer: _____

10. Calculate $\frac{2}{5}$ of 20.

Answer: _____

11. Look at this diagram showing 15 dots divided into 3 equal groups:



What is $\frac{1}{3}$ of 15?

Answer: _____

DIVISION CHAMPION!

Fraction Farmer

What did the farmer say about fractions?

"I've got a field day dividing my crops!"

Section 3: Word Problems (Challenge)

12. There are 24 students in a class. $\frac{1}{2}$ are boys. How many boys are there?

Answer: _____

13. I have $50. I spend $\frac{1}{10}$ of it. How much money did I spend?

Answer: _____

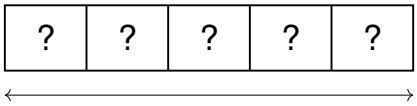
14. A box contains 36 chocolates. Sarah eats $\frac{1}{4}$ of them. How many chocolates did she eat?

Answer: _____

15. A bus has 40 seats. $\frac{3}{5}$ of the seats are occupied. How many seats are occupied?

Answer: _____

16. Look at this fraction strip showing a total of 30:



If the strip is divided into 5 equal parts, what is the value of each part?

Answer: _____

17. A jar contains 60 marbles. $\frac{2}{3}$ are blue. How many marbles are blue?

Answer: _____

WORD PROBLEM WIZARD!

Friendly Monster

What's a monster's favourite fraction?

$\frac{1}{2}$ - *because it's always looking for its other half!*

Excellent Work! Check your answers on the next page.

ANSWER KEY

Worksheet 21: Fractions of a Quantity

Section 1: Basic Calculations

1. 10 (20 ÷ 2 = 10)
2. 4 (16 ÷ 4 = 4)
3. 3 (9 ÷ 3 = 3)
4. 5 (25 ÷ 5 = 5)
5. 4 (40 ÷ 10 = 4)
6. 9 (18 ÷ 2 = 9)

Section 2: Multi-Step Problems

7. 6 (30 ÷ 5 = 6)
8. 12 ($\frac{1}{3}$ of 18 = 6, then 6 × 2 = 12)
9. 18 ($\frac{1}{4}$ of 24 = 6, then 6 × 3 = 18)
10. 8 ($\frac{1}{5}$ of 20 = 4, then 4 × 2 = 8)
11. 5 (15 ÷ 3 = 5, or count one group)

Section 3: Word Problems

12. 12 boys (24 ÷ 2 = 12)
13. $5 (50 ÷ 10 = 5)
14. 9 chocolates (36 ÷ 4 = 9)
15. 24 seats ($\frac{1}{5}$ of 40 = 8, then 8 × 3 = 24)
16. 6 (30 ÷ 5 = 6)
17. 40 marbles ($\frac{1}{3}$ of 60 = 20, then 20 × 2 = 40)

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WORKSHEET 22

Year 6 Mathematics: Fractions, Decimals & Percentages

Multiplying Fractions

Focus: Multiplying Fractions by Whole Numbers

Name: _____ **Date:** _____

Multiplying Fractions by Whole Numbers

Method: Multiply the Numerator

When we multiply a fraction by a whole number, we multiply the numerator (top number).

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

As Repeated Addition:

$$3 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5}$$

Converting Improper Fractions:

If the numerator is bigger than the denominator, convert to a mixed number:

$$\frac{6}{5} = 1\frac{1}{5}$$

(because 5 goes into 6 once with 1 left over)

Visual Example: $4 \times \frac{1}{3}$

$4 \times \frac{1}{3} = \frac{4}{3} = 1\frac{1}{3}$

Section 1: Basic Multiplication (Fluency)

1. Calculate: $3 \times \frac{1}{5}$
(Think: $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$)

Answer: _____

2. Calculate: $4 \times \frac{2}{9}$

Answer: _____

3. Calculate: $2 \times \frac{3}{7}$

Answer: _____

4. Calculate: $5 \times \frac{1}{4}$

Answer: _____

5. Calculate: $6 \times \frac{1}{10}$

Answer: _____

6. Calculate: $3 \times \frac{2}{3}$

Answer: _____

MULTIPLIER MASTER!

Calculator Pal

Why did the calculator love fractions?
Because it could always count on them!

Section 2: Mixed Numbers (Reasoning)

7. Calculate $5 \times \frac{1}{2}$. Write your answer as a mixed number.

Answer: _____

8. A recipe needs $\frac{1}{4}$ cup of sugar. I make 5 batches. How many cups of sugar do I need?

Answer: _____

9. Calculate $7 \times \frac{1}{3}$. Write your answer as a mixed number.

Answer: _____

10. A bottle holds $\frac{2}{5}$ of a litre. How much do 4 bottles hold?

Answer: _____

11. Calculate $6 \times \frac{2}{3}$ and simplify your answer.

Answer: _____

IMPROPER EXPERT!

Fraction Worm

What's a worm's favourite fraction?

Improper ones - they're a bit twisted!

Section 3: Problem Solving (Challenge)

12. $\frac{1}{3}$ of a number is 4. What is the number?
(Hint: Work backwards. If $\frac{1}{3}$ = 4, then the whole number = ?)

Answer: _____

13. Which is larger: $\frac{1}{2}$ of 20 or $\frac{1}{4}$ of 44?

Answer: _____

14. $\frac{1}{5}$ of a number is 7. What is $\frac{3}{5}$ of the same number?

Answer: _____

15. True or False: $4 \times \frac{1}{2}$ is the same as $\frac{1}{2}$ of 4.

Answer: _____

16. A chocolate bar is divided into 8 equal pieces. Tom eats $\frac{3}{8}$ of the bar. His sister eats twice as much. What fraction did his sister eat?

Answer: _____

17. Complete this pattern:

$1 \times \frac{1}{4} = \frac{1}{4}$
$2 \times \frac{1}{4} = \frac{2}{4}$
$3 \times \frac{1}{4} = \_\_\_\_$
$4 \times \frac{1}{4} = \_\_\_\_$

Answer: _____

FRACTION GENIUS!

Superstar

Why did the fraction become a star?

Because it was outstanding in its field... of maths!

Outstanding Work! Check your answers on the next page.

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ANSWER KEY

Worksheet 22: Multiplying Fractions by Whole Numbers

Section 1: Basic Multiplication

1. $\frac{3}{5}$ ($3 \times 1 = 3$, denominator stays 5)
2. $\frac{8}{9}$ ($4 \times 2 = 8$)
3. $\frac{6}{7}$ ($2 \times 3 = 6$)
4. $\frac{5}{4}$ or $1\frac{1}{4}$ ($5 \times 1 = 5$)
5. $\frac{6}{10}$ or $\frac{3}{5}$ ($6 \times 1 = 6$, simplified)
6. $\frac{6}{3}$ or 2 ($3 \times 2 = 6$, which equals 2 wholes)

Section 2: Mixed Numbers

7. $\frac{5}{2}$ or $2\frac{1}{2}$ ($5 \times 1 = 5$, convert: 2 wholes and 1 half)
8. $\frac{5}{4}$ or $1\frac{1}{4}$ cups ($5 \times 1 = 5$)
9. $\frac{7}{3}$ or $2\frac{1}{3}$ ($7 \times 1 = 7$, convert: 2 wholes and 1 third)
10. $\frac{8}{5}$ or $1\frac{3}{5}$ litres ($4 \times 2 = 8$)
11. $\frac{12}{3}$ or 4 ($6 \times 2 = 12$, which equals 4 wholes)

Section 3: Problem Solving

12. 12 (if $\frac{1}{3} = 4$, then multiply by 3: $4 \times 3 = 12$)
13. They are equal! ($\frac{1}{2}$ of 20 = 10; $\frac{1}{4}$ of 44 = 11). Wait - $\frac{1}{4}$ of 44 is larger!
14. 21 (if $\frac{1}{5} = 7$, whole number = 35, so $\frac{3}{5} = 7 \times 3 = 21$)
15. True (both equal 2)
16. $\frac{6}{8}$ or $\frac{3}{4}$ (twice $\frac{3}{8} = 2 \times 3 = 6$)
17. $3 \times \frac{1}{4} = \frac{3}{4}$ and $4 \times \frac{1}{4} = \frac{4}{4}$ or 1

Magnificent Achievement!

You've mastered Multiplying Fractions!
From fractions of quantities to improper fractions!