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Fractions of a Whole - Year 6

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Fractions of Quantities

Denominator = number of equal groups

Numerator = number of groups selected

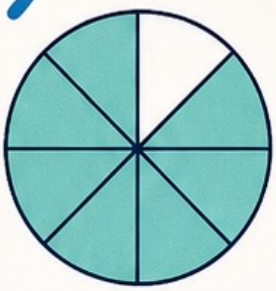
$\frac{3}{5}$ of 40

40 ÷ 5 = 8

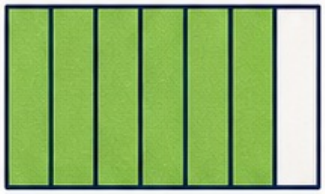
8 × 3 = 24

Answer: 24

Divide, Multiply, Check

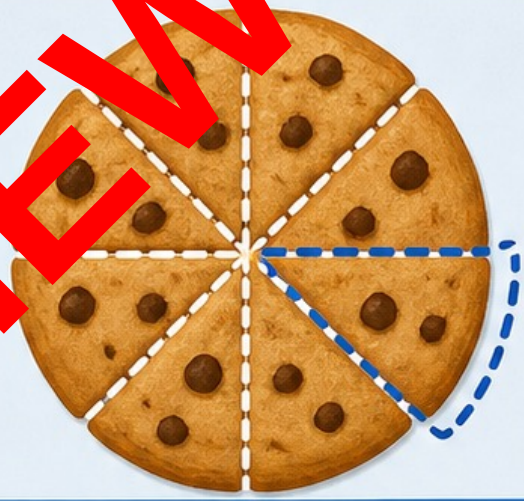


$\frac{7}{8}$ of 64



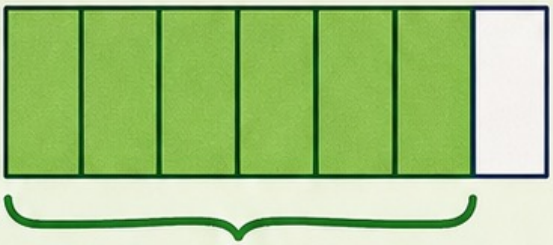
1 DIVIDE by the denominator

$64 \div 8 = 8$



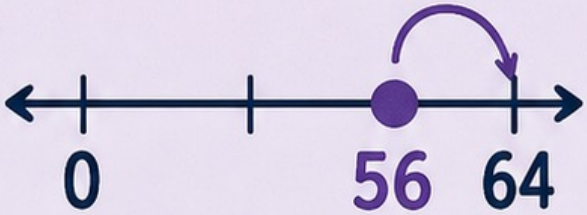
2 MULTIPLY by the numerator

$8 \times 7 = 56$



3 CHECK the answer is reasonable

56 is less than 64 and close to the whole.



Fraction Finder Four-in-a-Row

1. 2/3 of 45
2. 3/4 of 64
3. 5/6 of 72
4. 7/8 of 80
5. 4/5 of 125
6. 3/10 of 90
7. 11/12 of 144
8. 7/9 of 81
9. 3/5 of 110
10. 4/7 of 98
11. 9/10 of 200
12. 5/8 of 160

30	48	60	70	36
25	100	42	27	84
132	63	66	56	96
180	15	100	35	108
54	24	120	72	90

HOW TO PLAY

1. Roll, move and solve the fraction task.
2. Cover the matching answer in the centre.
3. First player to cover four in a row wins.

Fraction Match Relay

Cut out the cards. Solve a task, then race to match its answer card.

TASK CARDS

1 1/4 of 120	2 2/3 of 90
3 3/5 of 150	4 5/8 of 160
5 7/10 of 110	6 4/9 of 81
7 11/12 of 144	8 3/8 of 200
9 5/6 of 54	10 7/8 of 320

ANSWER CARDS

1 30	2 60
3 90	4 100
5 77	6 36
7 132	8 75
9 45	10 280

Unit Fraction Foundations

Name: _____

1. $\frac{1}{2}$ of 48

2. $\frac{1}{3}$ of 81

3. $\frac{1}{4}$ of 96

4. $\frac{1}{5}$ of 125

5. $\frac{1}{6}$ of 144

6. $\frac{1}{8}$ of 200

7. $\frac{1}{9}$ of 270

8. $\frac{1}{12}$ of 360

Unit Fraction Foundations

Name: ANSWERS

1. $\frac{1}{2}$ of 48

48 ÷ 2 = 24

24

2. $\frac{1}{3}$ of 81

81 ÷ 3 = 27

27

3. $\frac{1}{4}$ of 96

96 ÷ 4 = 24

24

4. $\frac{1}{5}$ of 125

125 ÷ 5 = 25

25

5. $\frac{1}{6}$ of 144

144 ÷ 6 = 24

24

6. $\frac{1}{8}$ of 200

200 ÷ 8 = 25

25

7. $\frac{1}{9}$ of 270

270 ÷ 9 = 30

30

8. $\frac{1}{12}$ of 360

360 ÷ 12 = 30

30

Unit Fraction Fluency

Name: _____

1. $\frac{1}{7}$ of 343	2. $\frac{1}{11}$ of 484
3. $\frac{1}{15}$ of 600	4. $\frac{1}{20}$ of 840
5. $\frac{1}{25}$ of 1000	$\frac{1}{16}$ of 512
7. $\frac{1}{18}$ of 91	8. $\frac{1}{24}$ of 1200
9. $\frac{1}{30}$ of 1500	10. $\frac{1}{32}$ of 2048

Unit Fraction Fluency

Name: ANSWERS

1. $\frac{1}{7}$ of 343 343 ÷ 7 = 49	2. $\frac{1}{11}$ of 484 484 ÷ 11 = 44
3. $\frac{1}{15}$ of 600 600 ÷ 15 = 40	4. $\frac{1}{20}$ of 840 840 ÷ 20 = 42
5. $\frac{1}{25}$ of 1000 1000 ÷ 25 = 40	$\frac{1}{16}$ of 512 512 ÷ 16 = 32
7. $\frac{1}{18}$ of 918 918 ÷ 18 = 51	8. $\frac{1}{24}$ of 1200 1200 ÷ 24 = 50
9. $\frac{1}{30}$ of 1500 1500 ÷ 30 = 50	10. $\frac{1}{32}$ of 2048 2048 ÷ 32 = 64

Model Fractions of Quantities

Name: _____

Partition each bar into equal groups, then solve.

1. $\frac{2}{3}$ of 24

Answer: _____

2. $\frac{3}{4}$ of 20

Answer: _____

3. $\frac{5}{6}$ of 30

Answer: _____

4. $\frac{2}{5}$ of 40

Answer: _____

5. $\frac{7}{8}$ of 32

Answer: _____

6. $\frac{4}{9}$ of 36

Answer: _____

Model Fractions of Quantities

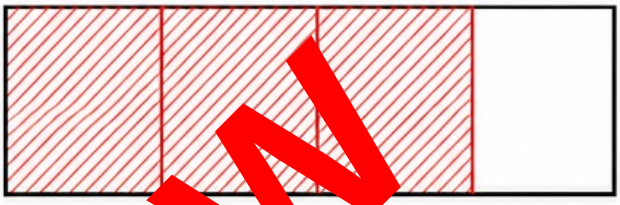
Name: ANSWERS

Partition each bar into equal groups, then solve.

1. $\frac{2}{3}$ of 24

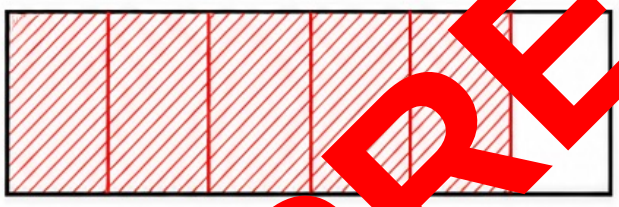
Answer: 16

2. $\frac{3}{4}$ of 20



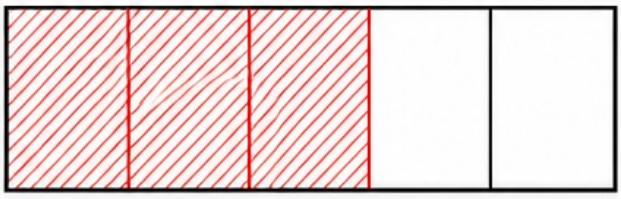
Answer: 15

3. $\frac{5}{6}$ of 30



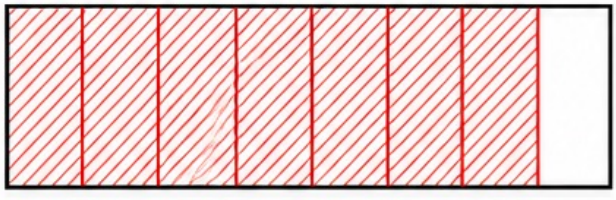
Answer: 25

4. $\frac{2}{5}$ of 40



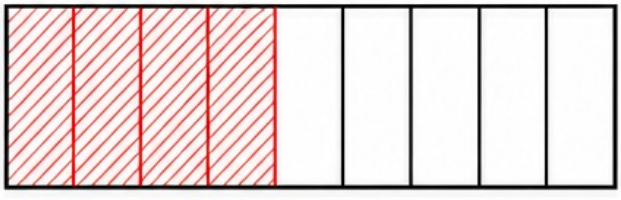
Answer: 24

5. $\frac{7}{8}$ of 32



Answer: 28

6. $\frac{4}{9}$ of 36



Answer: 16

Draw and Explain

Name: _____

Use a bar model. Write an equation and explain your thinking.

1. $\frac{3}{4}$ of 60

Equation: _____

Explain: _____

_____

2. $\frac{5}{8}$ of 96

Equation: _____

Explain: _____

_____

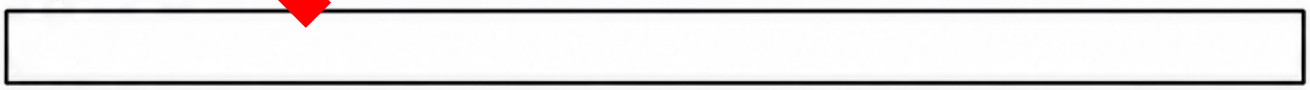
3. $\frac{7}{10}$ of 150

Equation: _____

Explain: _____

_____

4. $\frac{4}{6}$ of 90

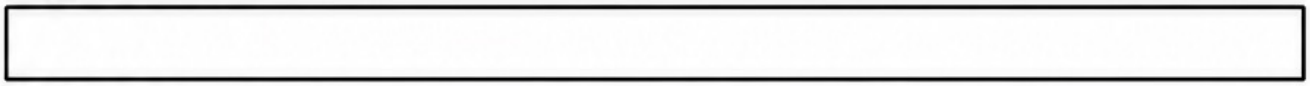


Equation: _____

Explain: _____

_____

5. $\frac{11}{12}$ of 144



Equation: _____

Explain: _____

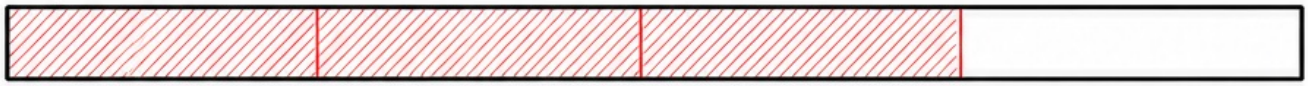
_____

Draw and Explain

Name: ANSWERS

Use a bar model. Write an equation and explain your thinking.

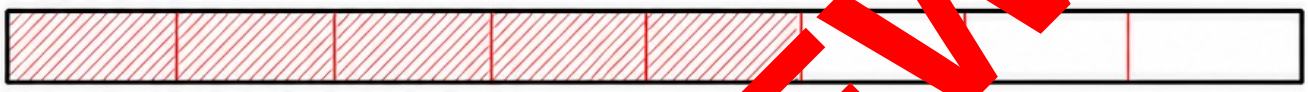
1. $\frac{3}{4}$ of 60



Equation: 60 ÷ 4 × 3 = 45

Explain: One quarter is 15, so three quarters are 45.

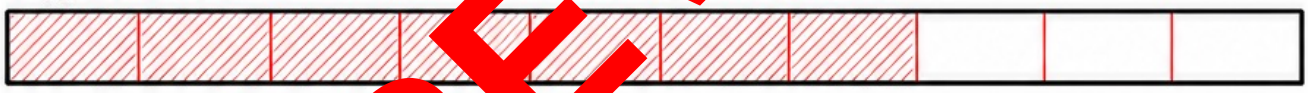
2. $\frac{5}{8}$ of 96



Equation: 96 ÷ 8 × 5 = 60

Explain: One eighth is 12, so five eighths are 60.

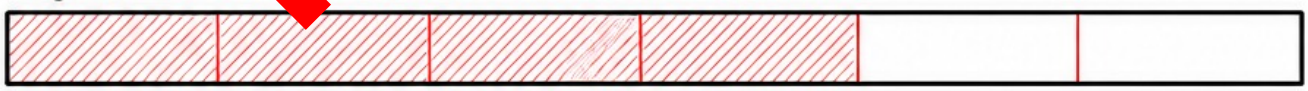
3. $\frac{7}{10}$ of 150



Equation: 150 ÷ 10 × 7 = 105

Explain: One tenth is 15, so seven tenths are 105.

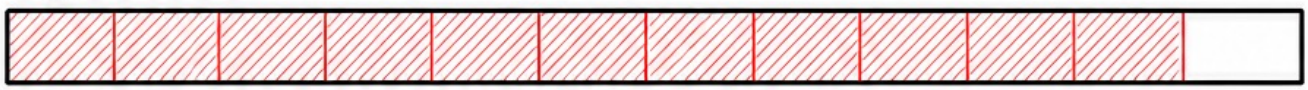
4. $\frac{4}{6}$ of 90



Equation: 90 ÷ 6 × 4 = 60

Explain: One sixth is 15, so four sixths are 60.

5. $\frac{11}{12}$ of 144



Equation: 144 ÷ 12 × 11 = 132

Explain: One twelfth is 12, so eleven twelfths are 132.

Fraction-of-Quantity Fluency — Core

Name: _____

1. $\frac{2}{5}$ of 75	**2.** $\frac{3}{8}$ of 64
3. $\frac{4}{9}$ of 81	**4.** $\frac{5}{6}$ of 54
5. $\frac{7}{10}$ of 120	$\frac{3}{4}$ of 220
7. $\frac{5}{12}$ of 14	**8.** $\frac{7}{8}$ of 200
9. $\frac{9}{10}$ of 350	**10.** $\frac{11}{15}$ of 300

Fraction-of-Quantity Fluency — Core

Name: ANSWERS

1. $\frac{2}{5}$ of 75 75 ÷ 5 × 2 = 30	**2.** $\frac{3}{8}$ of 64 64 ÷ 8 × 3 = 24
3. $\frac{4}{9}$ of 81 81 ÷ 9 × 4 = 36	**4.** $\frac{5}{6}$ of 54 54 ÷ 6 × 5 = 45
5. $\frac{7}{10}$ of 120 120 ÷ 10 × 7 = 84	**6.** $\frac{3}{4}$ of 220 220 ÷ 4 × 3 = 165
7. $\frac{5}{12}$ of 144 144 ÷ 12 × 5 = 60	**8.** $\frac{7}{8}$ of 200 200 ÷ 8 × 7 = 175
9. $\frac{9}{10}$ of 350 350 ÷ 10 × 9 = 315	**10.** $\frac{11}{15}$ of 300 300 ÷ 15 × 11 = 220

Fraction-of-Quantity Fluency — Extension

Name: _____

1. $\frac{7}{12}$ of 420	**2.** $\frac{11}{16}$ of 640
3. $\frac{13}{20}$ of 900	**4.** $\frac{17}{25}$ of 125
5. $\frac{19}{24}$ of 720	**6.** $\frac{23}{30}$ of 1500
7. $\frac{31}{40}$ of 1600	**8.** $\frac{37}{50}$ of 2500

Fraction-of-Quantity Fluency — Extension

Name: ANSWERS

1. $\frac{7}{12}$ of 420 420 ÷ 12 × 7 = 245	**2.** $\frac{11}{16}$ of 640 640 ÷ 16 × 11 = 440
3. $\frac{13}{20}$ of 900 900 ÷ 20 × 13 = 585	**4.** $\frac{17}{25}$ [illegible]125 [illegible]50 ÷ 25 × 17 = 850
5. $\frac{19}{24}$ of 720 720 ÷ 24 × 19 = 570	**6.** $\frac{23}{30}$ of 1500 1500 ÷ 30 × 23 = 1150
7. $\frac{31}{40}$ of 1600 1600 ÷ 40 × 31 = 1240	**8.** $\frac{37}{50}$ of 2500 2500 ÷ 50 × 37 = 1850

Missing Values and Reasoning

Name: _____

1. $\frac{3}{5}$ of $\square$ = 48

2. $\frac{7}{8}$ of $\square$ = 98

3. $\frac{\square}{12}$ of 180 = 75

4. $\frac{9}{\square}$ of 200 = 150

5. $\frac{4}{7}$ of 63 = $\square$

6. $\frac{11}{15}$ of 225 = $\square$

7. Compare $\frac{5}{8}$ of 160 with $\frac{7}{10}$ of 140. Which is greater? Justify.

_____

_____

_____

_____

8. Explain and correct: "$\frac{3}{4}$ of 84 = 84 ÷ 3 × 4".

_____

_____

_____

_____

Missing Values and Reasoning

Name: ANSWERS

1. $\frac{3}{5}$ of $\square$ = 48

80

2. $\frac{7}{8}$ of $\square$ = 98

112

3. $\frac{\square}{12}$ of 180 = 75

5

4. $\frac{9}{\square}$ of 200 = 150

12

5. $\frac{4}{7}$ of 63 = $\square$

36

6. $\frac{11}{15}$ of 225 = $\square$

165

7. Compare $\frac{5}{8}$ of 160 with $\frac{7}{10}$ of 140. Which is greater? Justify.

$\frac{5}{8}$ of 160 = 100; $\frac{7}{10}$ of 140 = 98. 100 is greater than 98 by 2.

8. Explain and correct: "$\frac{3}{4}$ of 84 = 84 ÷ 3 × 4".

The denominator tells us to divide by 4, not 3. 84 ÷ 4 × 3 = 63.

Real-World Fraction Problems

Name: _____

Show your working. Write each answer as a full sentence with units.

1. A school library has 240 books on display. Three-fifths are fiction.
How many fiction books are on display?

2. A sports club has 360 members. Seven-twelfths are jun[illegible]ers.
How many junior members are there?

3. A water tank holds 960 L whe[illegible]ull. It i[illegible]eighths full.
How many litres of water ar[illegible]n th[illegible]ank?

4. A theatre has [illegible] seats. Nine-tenths are occupied.
How many seats are occupied?

5. A nursery has 450 native seedlings. Eleven-fifteenths are ready to plant.
How many native seedlings are ready?

Real-World Fraction Problems

Name: ANSWERS

Show your working. Write each answer as a full sentence with units.

1. A school library has 240 books on display. Three-fifths are fiction.
How many fiction books are on display?

240 ÷ 5 × 3 = 144.

There are 144 fiction books on display.

2. A sports club has 360 members. Seven-twelfths are jun[illegible]ers.
How many junior members are there?

360 ÷ 12 × 7 = 210.

There are 210 junior member[illegible]

3. A water tank holds 960 L whe[illegible]ull. It i[illegible]eighths full.
How many litres of water ar[illegible]n th[illegible]ank?

960 ÷ 8 × 5 = [illegible]00

There are [illegible] L [illegible] water in the tank.

4. A theatre has 8[illegible] seats. Nine-tenths are occupied.
How many seats are occupied?

850 ÷ 10 × 9 = 765.

There are 765 occupied seats.

5. A nursery has 450 native seedlings. Eleven-fifteenths are ready to plant.
How many native seedlings are ready?

450 ÷ 15 × 11 = 330.

There are 330 native seedlings ready to plant.

Multi-Step Fraction Challenges

Name: _____

Show each step and write a complete answer.

1. A theatre has 480 tickets. Three-eighths are sold in the morning and five-twelfths are sold in the afternoon.
How many tickets remain?

2. A marine survey counts 720 fish. Five-ninths a[illegible] reef fi[illegible]
Of the remaining fish, three-eighths are juv[illegible]es.
How many juvenile fish are there?

3. A class has a $9[illegible] oject budget. Five-twelfths is spent on equipment [illegible]d [illegible]e-q[illegible]ter is spent on transport.
How much [illegible]ma[illegible]s?

4. A market receives 840 pieces of fruit. Three-sevenths are apples.
Of the remainder, five-twelfths are oranges.
How many pieces are other kinds of fruit?

Multi-Step Fraction Challenges

Name: **ANSWERS**

Show each step and write a complete answer.

1. A theatre has 480 tickets. Three-eighths are sold in the morning and five-twelfths are sold in the afternoon. How many tickets remain?

Morning: $480 \times \frac{3}{8} = 180$.

Afternoon: $480 \times \frac{5}{12} = 200$.

Remaining: $480 - 180 - 200 = 100$ tickets.

2. A marine survey counts 720 fish. Five-ninths are reef fish. Of the remaining fish, three-eighths are juveniles. How many juvenile fish are there?

Reef fish: $720 \times \frac{5}{9} = 400$.

Remaining: $720 - 400 = 320$

Juveniles: $320 \times \frac{3}{8} = 120$ fish

3. A class has a $960 project budget. Five-twelfths is spent on equipment and one-quarter is spent on transport. How much remains?

Equipment: $960 \times \frac{5}{12} = \$400$.

Transport: $960 \times \frac{1}{4} = \$240$.

Remaining: $\$960 - \$400 - \$240 = \$320$.

4. A market receives 840 pieces of fruit. Three-sevenths are apples. Of the remainder, five-twelfths are oranges. How many pieces are other kinds of fruit?

Apples: $840 \times \frac{3}{7} = 360$.

Remainder: 480.

Oranges: $480 \times \frac{5}{12} = 200$.

Other kinds: $480 - 200 = 280$ fruit.

Fractions of a Whole Assessment — Fluency and Strategy

Name: _____ **Date:** _____

1. $\frac{1}{8}$ of 240

---

2. $\frac{5}{6}$ of 90

---

3. $\frac{7}{12}$ of 144

---

4. $\frac{13}{20}$ of 400

---

5. $\frac{3}{5}$ of $\square$ = 72

---

6. $\frac{\square}{10}$ of 250 = 17

---

7. Estimate, then solve: $\frac{9}{16}$ of 800

---

8. Show an efficient strategy for $\frac{25}{40}$ of 640

Fractions of a Whole Assessment — Fluency and Strategy

Name: ANSWERS Date: _____

1. $\frac{1}{8}$ of 240

240 ÷ 8 = 30

---

2. $\frac{5}{6}$ of 90

90 ÷ 6 × 5 = 75

---

3. $\frac{7}{12}$ of 144

144 ÷ 12 × 7 = 84

---

4. $\frac{13}{20}$ of 400

400 ÷ 20 × 13 = 260

---

5. $\frac{3}{5}$ of ☐ = 72

☐ = 120

---

6. $\frac{\square}{10}$ of 250 = 17

☐ = 7

---

7. Estimate, then solve: $\frac{9}{16}$ of 800

Estimate: about 400. Exact: 800 ÷ 16 × 9 = 450.

---

8. Show an efficient strategy for $\frac{25}{40}$ of 640

Simplify 25/40 to 5/8. 640 ÷ 8 × 5 = 400.

Fractions of a Whole Assessment — Apply and Explain

Name: _____ **Date:** _____

1. A venue sold seven-tenths of 450 tickets. How many tickets were sold?

2. A library has 960 books. Three-eighths are fiction and five-twelfths are information books. How many books remain in other categories?

3. Explain and correct: "4/7 of 126 = 126 ÷ 4 × 7"

4. Create a fraction-of-quantity word problem and solve it.

5. Show two different methods for 3/5 of 250.

Method 1	Method 2

Fractions of a Whole Assessment — Apply and Explain

Name: ANSWERS **Date:** _____

1. A venue sold seven-tenths of 450 tickets. How many tickets were sold?

450 ÷ 10 × 7 = 315 tickets.

2. A library has 960 books. Three-eighths are fiction and five-twelfths are information books. How many books remain in other categories?

Fiction: 960 × 3/8 = 360.
Information: 960 × 5/12 = 400.
Remaining: 960 − 360 − 400 = 200 books.

3. Explain and correct: "4/7 of 126 = 126 ÷ 4 × 7"

- The denominator tells us to divide by 7, not 4. 126 ÷ 7 × 4 = 72.

4. Create a fraction-of-quantity word problem and solve it.

Example: A shelf has 160 books. Three-eighths are novels. 160 ÷ 8 × 3 = 60 novels.

5. Show two different methods for 3/5 of 250.

Method 1	Method 2
250 ÷ 5 × 3 = 150.	250 × 3 ÷ 5 = 150.

Fractions of a Whole - Year 6 Rubric

Student: _____ **Date:** _____

Criteria	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. Identify whole, fraction and unit fraction	Needs substantial support to identify wholes, fractions and unit fractions.	Identifies some wholes, fractions and unit fractions with guidance.	Identifies wholes, fractions and unit fractions in familiar situations.	Accurately identifies wholes, fractions and unit fractions in varied representations.	Accurately and flexibly identifies wholes, fractions and unit fractions in complex contexts.
2. Calculate accurately	Calculations often incorrect; relies on support and models.	Completes simple calculations with some errors and teacher support.	Calculates accurately for simple fractions of a whole.	Calculates accurately for a range of fractions of a whole, including equivalent fractions.	Calculates accurately and efficiently; applies knowledge to unfamiliar problems.
3. Choose efficient strategy and estimate	Strategy chosen for student; estimates not attempted or far from reasonable.	Uses a suggested strategy with support; estimates sometimes reasonable.	Chooses an appropriate strategy for the task, gives reasonable estimates.	Selects efficient strategies independently; estimates are close to reasonable.	Chooses the most efficient strategy; estimates are accurate and justify thinking.
4. Model and explain reasoning	Models are unclear or incomplete; explanations are minimal with support.	Creates simple models with support; explains reasoning with prompts.	Creates clear models; explains reasoning using correct fraction language.	Creates effective models; explains reasoning clearly and logically.	Creates precise models; explains reasoning thoroughly and connects ideas in multiple ways.
5. Solve and check multi-step contexts	Needs help to understand the problem; steps incomplete; little or no checking.	Solves some steps with support; limited checking; may miss important details.	Solves multi-step problems with most steps correct; checks with some success.	Solves multi-step problems accurately; checks using effective methods.	Solves complex multi-step problems accurately and efficiently; checks and justifies solutions.

Fractions of a Whole
Year 6

Learning Goal

Calculate fractions of whole-number quantities.

Model the process, explain each step and check that every answer is reasonable.

A Fraction Can Be an Operator

3/5 of 40 means: select 3 of 5 equal groups from a whole quantity of 40.

The word “of” tells us to multiply after finding one equal group.

Step 1: Divide by the Denominator

The denominator tells us how many equal groups make the whole.

For 3/5 of 40: 40 ÷ 5 = 8.

One-fifth of 40 is 8.

Step 2: Multiply by the Numerator

The numerator tells us how many equal groups to select.

For 3/5 of 40: 8 ... 24.

Three ... of ... 4

Worked Example

3/5 of 40

= 40 ÷ 5 × 3

= 8 × 3

= 24

Visualise Equal Groups

For 5/8 of 64, partition a bar representing 64 into 8 equal groups.

Each group is 8. Shade 5 groups.

8 × 5 = 40, so 5/8 of 64 = 40.

Choose an Efficient Strategy

- Divide first when the whole is a multiple of the denominator.
- Simplify the fraction when that makes the calculation easier.
- Use familiar benchmarks such as one-half, one-quarter or one-tenth.

Check Reasonableness

Ask: Is the answer between 0 and the whole?

Compare the fraction with one-half.

For 7/8 of 64, an answer close to 64 is reasonable; 56 passes the check.

Avoid a Common Error

Incorrect: 3/4 of 84 = 84 ÷ 3 × 4.

The denominator ... the equal groups.

Correct: ... 63.

Solve Word Problems

1. Identify the whole quantity.
2. Identify the fraction.
3. Decide what quantity is requested.
4. Calculate and the unit and check the result.

Worked Context

A club has 360 members. Seven twelfths are junior members.

360 ÷ 12 = 30

30 × 7 = 210

There are 210 junior members.

Guided Practice

Calculate and explain:

A. 4/5 of 125

B. 5/8 of 160

Check each result against one-half and the whole.

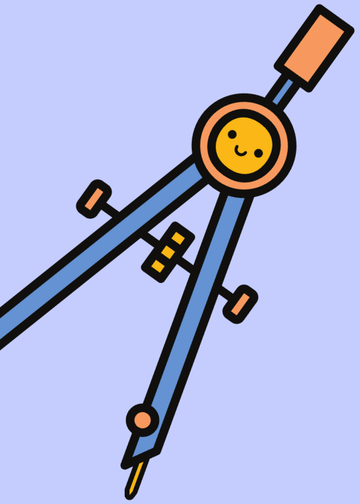
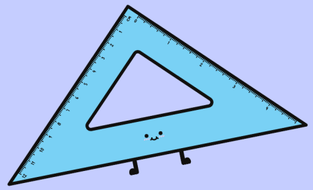
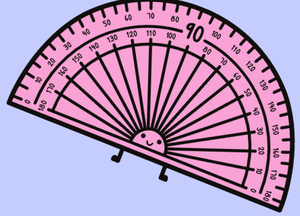
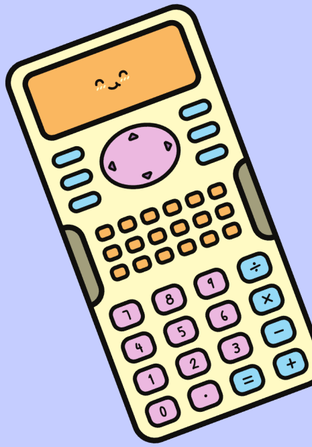
Reasoning Challenge

Which is greater: 5/8 of 160 or 7/10 of 140?

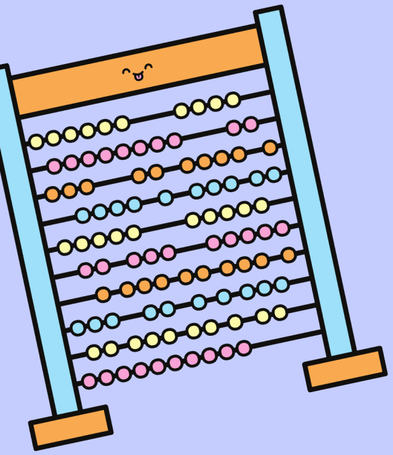
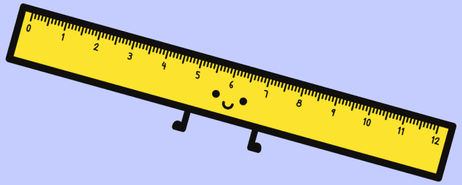
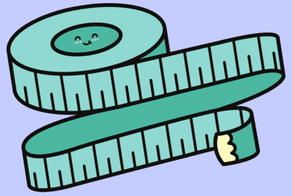
5/8 of 160 = 100

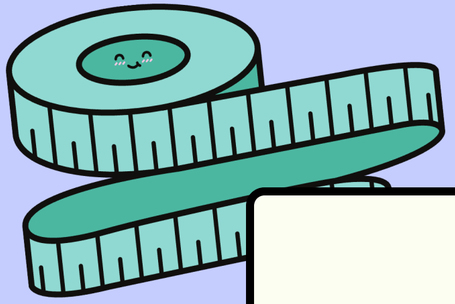
7/10 of 140 = 98

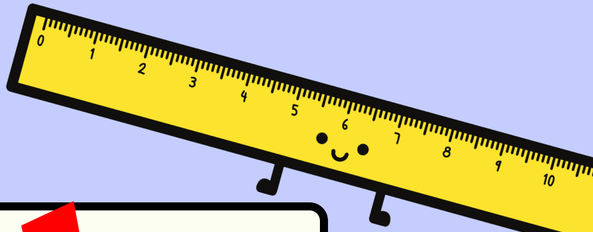
Explain why 10 is greater by 2.

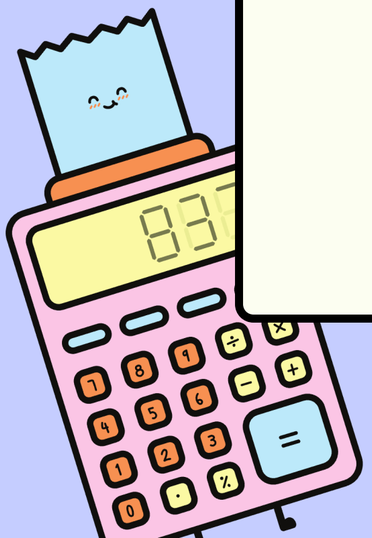
Well Done!



Fractions of a Whole Quiz - Year 6



Sukindi LEARNING

Question 1 - True or False

1/6 of 72 is 12.

Answer 1

TR[illegible]

[illegible] - 6 = 12.

Question 2 - Short Answer

Calculate 3/5 of 80.

Answer 2

4

80 ÷ 3 × 3 = 48.

Question 3 – Multiple Choice

Calculate [illegible] of 64.

[illegible]. 48 B. [illegible]4 C. 56 D. 60

Answer 3

C. 6

64 ÷ 8 × 7 = 56.

Question 4 – True or False

To find 4/9 of a quantity, divide by 4 first.

Answer 4

FALSE

Divide by the denominator, 9, before multiplying by 4.

Question 5 - Short Answer

Calculate 11/12 of 144.

Answer 5

13

14 × 12 × 11 = 132.

Question 6 – Multiple Choice

5/8 of a number is 75. What is the whole number?

A. 96 B. 100 C. 120 D. 128

Answer 6

C. 1[illegible]

75 [illegible] × 8 = 120.

Question 7 – Context

A ve ue sold 3/1 f 450 tickets.

ow many tickets were sold?

Answer 7

135 tickets

50 × 3 = 135.

Question 8 - Compare

Which is g[illegible]r?

A. 5/[illegible] of [illegible]60

B. 7/10 of 140

[illegible]. They are equal

[illegible]. There is not enough information

Answer 8

A. 5/ of 60

100 and 7/10 of 140 = 98.

10 is greater than 98.

Question 9 - True or False

13/20 of 400 is 260.

Answer 9

TR[illegible]

[illegible]0 × 13 = 260.

Question 10 – Multi-Step

Of 480 tickets, 3/8 were sold in the morning and 5/12 in the afternoon.

How many tickets remain?

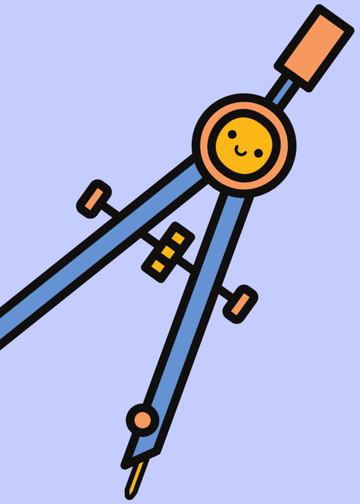
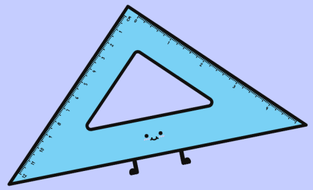
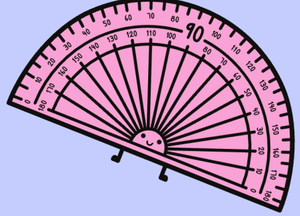
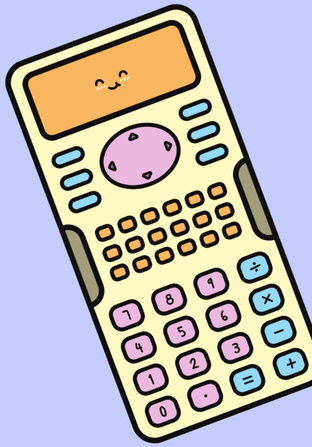
Answer 10

100 tickets remain.

Morning: 480 × 3/8 = 180

Afternoon: 480 × 5/12 = 200

480 − 180 − 200 = 100

Well Done!