UPDATED EDITION

Simply Good and Beautiful

MATH 5

ANSWERS & SOLUTIONS

The Good and the Beautiful CURRICULUM

Note to Parents

Math 5 Answers and Solutions **includes detailed solutions for all problems in the course book. Final answers are highlighted for easy reference.**

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LONG DIVISION WITH REMAINDERS: CHECKING DIVISION

Video Lesson

```
  35 R4
7)249
 -21
  39
 -35
   4
```

Practice

1. a.
```
  121 R2
3)365
 -3
  06
 - 6
  05
 - 3
   2
```

b.
```
   213 R6
12)2,562
 -24
   16
 -12
   42
 -36
    6
```

2.
```
  172 R5
3)521
 -3
  22
 -21
   11
  -6
   5
```

```
  173 R2
3)521
 -3
  22
 -21
   11
  -9
   2
```

3.
```
  2
  173
×   3
  519
```

```
  519
+   2
  521
```

4.
```
  13 R1
2)27
 -2
  07
 - 6
   1
```

13 books
Money left over: $1

5. a.
```
   21 R2
6)128
 -12
   08
  - 6
    2
```

21 treats

b. Treats left over: 2

6.
```
  11 R7
8)95
 -8
  15
 - 8
   7
```

a. 11 ears of corn

b. 7 ears of corn

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7. $2\overline{)429}$ 214 R1 $7\overline{)894}$ 127 R3 $3\overline{)962}$ 320 R2

Work for checking each answer is shown below:

$$\begin{array}{r} 214 \\ \times\ \ 2 \\ \hline 428 \end{array} \qquad \begin{array}{r} 428 \\ +\ \ 1 \\ \hline 429 \end{array}$$

This answer is correct.

$$\begin{array}{r} {\scriptstyle 1\ 4} \\ 127 \\ \times\ \ 7 \\ \hline 889 \end{array} \qquad \begin{array}{r} 889 \\ +\ \ 3 \\ \hline 892 \end{array}$$

This answer is incorrect.

$$\begin{array}{r} 320 \\ \times\ \ 3 \\ \hline 960 \end{array} \qquad \begin{array}{r} 960 \\ +\ \ 2 \\ \hline 962 \end{array}$$

This answer is correct.

8. a. $11\overline{)2{,}541}$ 231

-22
34
-33
11
-11
0

b. $9\overline{)315}$ 35

-27
45
-45
0

c. $7\overline{)928}$ 132 R4

-7
22
-21
18
-14
4

Review

1. fraction: $\frac{74}{100}$

percent: 74%

2. a. (given)

b. $4^3 = 4 \times 4 \times 4 = 64$

c. $3^3 = 3 \times 3 \times 3 = 27$

d. $2^4 = 2 \times 2 \times 2 \times 2 = 16$

3. 486:
486 is even, so 486 is divisible by 2. 4 + 8 + 6 = 18 18 is divisible by 3, so 486 is divisible by 3.
486 is divisible by 6 because it is divisible by both 2 and 3.

772:
772 is even, so 772 is divisible by 2. 7 + 7 + 2 = 16 16 is not divisible by 3, so 772 is not divisible by 3.
772 is not divisible by 6 because it is not divisible by 3.

PERFECT SQUARES TO 225 AND LOGIC GAME

Practice

$4^2 = 16$ | $\sqrt{9} = 3$ | $5^2 = 25$ | $\sqrt{36} = 6$

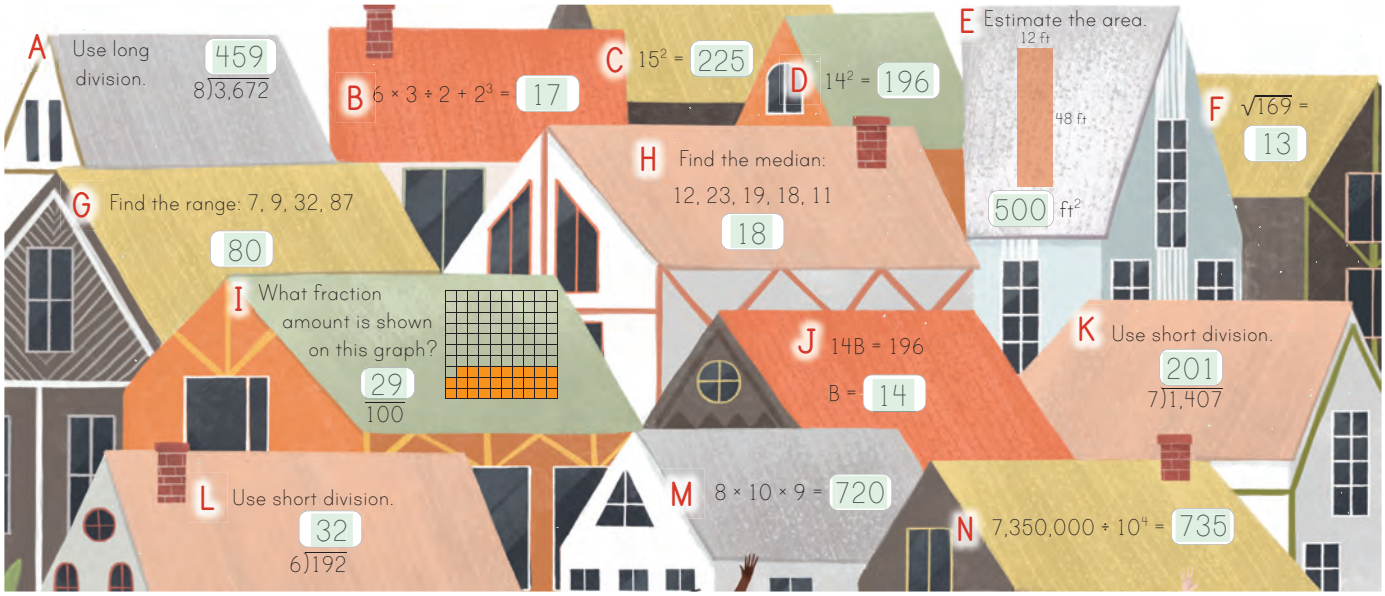
$2^2 = 4$ | $\sqrt{81} = 9$ | $7^2 = 49$ | $\sqrt{100} = 10$

$11^2 = 121$ | $13^2 = 169$ | $\sqrt{64} = 8$ | $\sqrt{49} = 7$

$3^2 = 9$ | $\sqrt{1} = 1$ | $12^2 = 144$ | $\sqrt{196} = 14$

$15^2 = 225$ | $\sqrt{169} = 13$ | $\sqrt{225} = 15$ | $\sqrt{144} = 12$

Number Neighborhood



Work for each problem is shown on the next page.

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House numbers:
13, 14, 17, 18, 29, 32, 80, 196, 201, 225, 459, 500, 720, 735

Clues:

☑ Mia's address is divisible by 5.
This is given on the chart.

☑ McKay's address is divisible by 6.
18 is divisible by both 2 and 3, so 18 is divisible by 6. 720 is divisible by both 2 and 3, so 720 is divisible by 6. Write 18 and 720 in McKay's row.

☑ Heidi's address is divisible by 10.
80, 500, and 720 all end in a 0, so they are all divisible by 10. Write 80, 500, and 720 in Heidi's row.

☑ Grayson's address is divisible by 4.
32 and 80 are divisible by 4. 196 is divisible by 4 because the last two digits (96) are divisible by 4. 500 is divisible by 4 because the last two digits (00) are divisible by 4. 720 is divisible by 4 because the last two digits (20) are divisible by 4. Write 32, 80, 196, 500, and 720 in Grayson's row.

☑ Sawyer's address is odd and greater than 100.
201, 225, 459, and 735 are odd and greater than 100. Write 201, 225, 459, and 735 in Sawyer's row.

☑ Elijah's address is a two-digit prime number.
13, 17, and 29 are two-digit prime numbers. Write 13, 17, and 29 in Elijah's row.

☑ If you multiply the digits of Domenic's address, the product is 0.
For a product to be 0, at least one of the digits must be 0. 80, 201, 500, and 720 all have 0 as a digit. Write 80, 201, 500, and 720 in Domenic's row.

☑ Mia's address is 15 squared.
$15 \times 15 = 225$. Circle 225 in Mia's row.

☑ Elijah's address is greater than 4^2 and less than 3^3.
$4^2 = 4 \times 4 = 16$ and $3^3 = 3 \times 3 \times 3 = 27$. 17 is greater than 16 and less than 27. Circle 17 in Elijah's row.

☑ If you multiply the digits of Grayson's address, the product is greater than 2 and less than 10.
80, 500, and 720 have 0 as a digit, so the product of their digits is 0, which is not greater than 2. For 32, $3 \times 2 = 6$, and for 196, $1 \times 9 \times 6 = 54$. The product of the digits of 32 is 6, which is greater than 2 and less than 10. Circle 32 in Grayson's row.

☑ McKay's address is less than the quotient of $5{,}000 \div 10^2$.
The exponent is 2. Take 2 zeros off of 5,000. $5{,}000 \div 10^2 = 50$. 18 is less than 50. Circle 18 in McKay's row.

☑ Heidi's address is divisible by 8 and greater than 100.
80 is not greater than 100. 500 is not divisible by 8. 720 is divisible by 8 and is greater than 100. Circle 720 in Heidi's row.

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UNIT ASSESSMENT

Number Patterns/Divisibility Strategies

1. 110 + 15 = 125
125 + 15 = 140
140 + 15 = 155
155 + 15 = 170
170 + 15 = 185
185 + 15 = 200

110, 125, 140, 155, 170, 185, 200
rule: add 15

2. The number is divisible by 2 because it is even.
9 + 6 + 4 + 0 = 19 19 is not divisible by 3, so 9,640 is not divisible by 3.
The number formed by the last two digits (40) is divisible by 4, so 9,640 is divisible by 4.
The number is divisible by 5 because it ends in a 0.
The number is not divisible by 6 because it is not divisible by 3.
The sum of the digits (19) is not divisible by 9, so 9,640 is not divisible by 9.
The number is divisible by 10 because it ends in a 0.

(2) 3 (4) (5) 6 9 (10)

Number Patterns/Divisibility Strategies Additional Practice

1. 99 - 11 = 88
88 - 11 = 77
77 - 11 = 66
66 - 11 = 55
55 - 11 = 44
44 - 11 = 33

99, 88, 77, 66, 55, 44, 33
rule: subtract 11

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2. The number is divisible by 2 because it is even.
4 + 8 + 2 + 4 = 18 18 is divisible by 3, so 4,824 is divisible by 3.
The number formed by the last two digits (24) is divisible by 4, so 4,824 is divisible by 4.
The number is not divisible by 5 because it does not end in a 0 or 5.
The number is divisible by 6 because it is divisible by both 2 and 3.
The sum of the digits (18) is divisible by 9, so 4,824 is divisible by 9.
The number is not divisible by 10 because it does not end in a 0.

(2) (3) (4) 5 (6) (9) 10

Factors of Prime & Composite Numbers

1. 17: 1, (17)

2. 20: 1, (2), 4, (5), 10, 20

3. 35: 1, (5), (7), 35

4. 41: 1, (41)

Factors of Prime & Composite Numbers Additional Practice

1. 30: 1, (2), (3), (5), 6, 10, 15, 30

2. 55: 1, (5), (11), 55

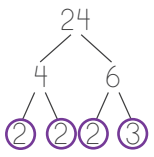
3. 18: 1, (2), (3), 6, 9, 18

4. 43: 1, (43)

Prime Factorization

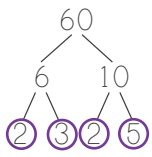
Different factors could have been chosen for the first branches. An example for each is shown below.

1.



2 × 2 × 2 × 3

2.



2 × 2 × 3 × 5

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PERIMETER AND AREA OF IRREGULAR SHAPES

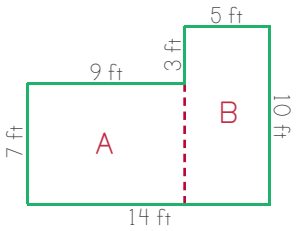
Video Lesson

Top Box

P = 7 ft + 9 ft + 3 ft + 5 ft + 10 ft + 14 ft = 48 ft

perimeter = 48 ft

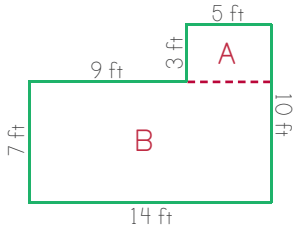
Work may vary. The area is shown using three different methods below.



Area A: 9 ft × 7 ft = 63 ft^2

Area B: 5 ft × 10 ft = 50 ft^2

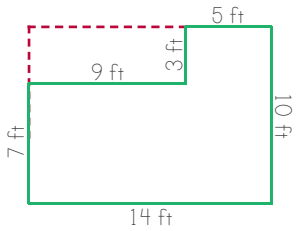
Area of irregular shape: 63 ft^2 + 50 ft^2 = 113 ft^2



Area A: 5 ft × 3 ft = 15 ft^2

Area B: 14 ft × 7 ft = 98 ft^2

Area of irregular shape: 15 ft^2 + 98 ft^2 = 113 ft^2



Area of large rectangle: 14 ft × 10 ft = 140 ft^2

Area of the empty space: 9 ft × 3 ft = 27 ft^2

Area of irregular shape: 140 ft^2 - 27 ft^2 = 113 ft^2

area = 113 ft^2

Bottom Box

Length of the blue side: 3 ft + 4 ft = 7 ft

Length of the purple side: __ ft + 5 ft = 10 ft

10 ft - 5 ft = 5 ft

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UNIT 2 REVIEW: COUNTY FAIR FUN

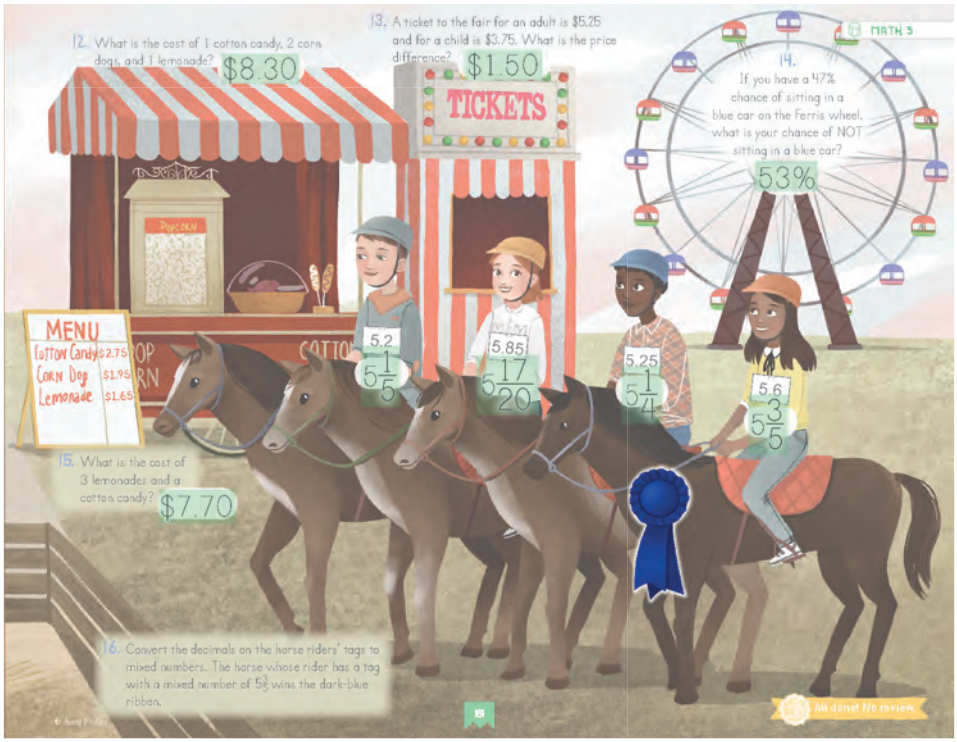
Review

The final answers and the winning ribbons are shown below. Work for each problem is shown starting on the next page.





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1. a. $\frac{1}{8}$: Half of 8 is 4. 1 is less than 4, so $\frac{1}{8}$ is less than $\frac{1}{2}$.

$\frac{2}{4}$: Half of 4 is 2, so $\frac{2}{4}$ is equal to $\frac{1}{2}$.

$\frac{4}{5}$: Half of 5 is $2\frac{1}{2}$. 4 is greater than $2\frac{1}{2}$, so $\frac{4}{5}$ is greater than $\frac{1}{2}$.

Least to greatest: $\frac{1}{8}, \frac{2}{4}, \frac{4}{5}$

b. $\frac{1}{2}$: $\frac{1}{2}$ is equivalent to $\frac{1}{2}$.

$\frac{2}{7}$: Half of 7 is $3\frac{1}{2}$. 2 is less than $3\frac{1}{2}$, so $\frac{2}{7}$ is less than $\frac{1}{2}$.

$\frac{7}{9}$: Half of 9 is $4\frac{1}{2}$. 7 is greater than $4\frac{1}{2}$, so $\frac{7}{9}$ is greater than $\frac{1}{2}$.

Least to greatest: $\frac{2}{7}, \frac{1}{2}, \frac{7}{9}$

c. $\frac{3}{6}$: Half of 6 is 3, so $\frac{3}{6}$ is equal to $\frac{1}{2}$.

$\frac{9}{10}$: Half of 10 is 5. 9 is greater than 5, so $\frac{9}{10}$ is greater than $\frac{1}{2}$.

$\frac{2}{5}$: Half of 5 is $2\frac{1}{2}$. 2 is less than $2\frac{1}{2}$, so $\frac{2}{5}$ is less than $\frac{1}{2}$.

Least to greatest: $\frac{2}{5}, \frac{3}{6}, \frac{9}{10}$

d. $\frac{6}{7}$: Half of 7 is $3\frac{1}{2}$. 6 is greater than $3\frac{1}{2}$, so $\frac{6}{7}$ is greater than $\frac{1}{2}$.

$\frac{8}{16}$: Half of 16 is 8, so $\frac{8}{16}$ is equal to $\frac{1}{2}$.

$\frac{5}{5}$: $\frac{5}{5}$ is equal to 1. 1 is equal to $\frac{7}{7}$, and $\frac{7}{7} > \frac{6}{7}$, so $\frac{5}{5}$ is greater than $\frac{6}{7}$.

Least to greatest: $\frac{8}{16}, \frac{6}{7}, \frac{5}{5}$

$\frac{5}{5}$ is the greatest fraction.

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CONVERTING IMPROPER FRACTIONS TO WHOLE OR MIXED NUMBERS

Video Lesson

Different strategies may be used to convert to improper fractions. A sample strategy is shown for each problem below.

Top Left Box

$\frac{11}{5} = \frac{5}{5} + \frac{5}{5} + \frac{1}{5}$

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

$= 2\frac{1}{5}$



Top Right Box

$4\overline{)10}$ $2\frac{2}{4} = 2\frac{1}{2}$

$-\ 8$

2

Bottom Box

$4\frac{5}{9} + 7\frac{8}{9}$

$= 11\frac{13}{9}$

$= 11 + 1\frac{4}{9}$

$= 12\frac{4}{9}$

Practice

1. a. (given)

b. $\frac{11}{4}$, $2\frac{3}{4}$

c. $\frac{23}{6}$, $3\frac{5}{6}$

d. $\frac{14}{3}$, $4\frac{2}{3}$

e. $\frac{53}{9}$, $5\frac{8}{9}$

2. a. (given)

b. 9

c. 5

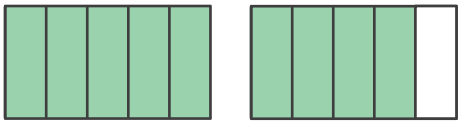
d. 9

3. Different strategies may be used to convert improper fractions.

a. $\frac{9}{5} = \frac{5}{5} + \frac{4}{5}$

$= 1 + \frac{4}{5}$

$= 1\frac{4}{5}$



b. $20\overline{)47}$ $2\frac{7}{20}$

-40

7

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6. Different strategies may be used. Work for each problem is shown below.

$\frac{5}{2} = 2\frac{1}{2}$	A $\frac{4}{3} = 1\frac{1}{3}$	B $\frac{11}{6} = 1\frac{5}{6}$	C $\frac{13}{4} = 3\frac{1}{4}$
D $\frac{25}{6} = 4\frac{1}{6}$	E $\frac{31}{5} = 6\frac{1}{5}$	F $\frac{23}{3} = 7\frac{2}{3}$	G $\frac{19}{7} = 2\frac{5}{7}$
H $\frac{31}{4} = 7\frac{3}{4}$	I $\frac{24}{11} = 2\frac{2}{11}$	J $\frac{44}{5} = 8\frac{4}{5}$	K $\frac{17}{9} = 1\frac{8}{9}$
L $\frac{15}{8} = 1\frac{7}{8}$	M $\frac{15}{4} = 3\frac{3}{4}$	N $\frac{25}{12} = 2\frac{1}{12}$	O $\frac{27}{8} = 3\frac{3}{8}$

A
$$3\overline{)4} = 1\tfrac{1}{3}, \quad -3, \quad 1$$

B
$$6\overline{)11} = 1\tfrac{5}{6}, \quad -6, \quad 5$$

C
$$4\overline{)13} = 3\tfrac{1}{4}, \quad -12, \quad 1$$

D
$$6\overline{)25} = 4\tfrac{1}{6}, \quad -24, \quad 1$$

E
$$5\overline{)31} = 6\tfrac{1}{5}, \quad -30, \quad 1$$

F
$$3\overline{)23} = 7\tfrac{2}{3}, \quad -21, \quad 2$$

G
$$7\overline{)19} = 2\tfrac{5}{7}, \quad -14, \quad 5$$

H
$$4\overline{)31} = 7\tfrac{3}{4}, \quad -28, \quad 3$$

I
$$11\overline{)24} = 2\tfrac{2}{11}, \quad -22, \quad 2$$

J
$$5\overline{)44} = 8\tfrac{4}{5}, \quad -40, \quad 4$$

K
$$9\overline{)17} = 1\tfrac{8}{9}, \quad -9, \quad 8$$

L
$$8\overline{)15} = 1\tfrac{7}{8}, \quad -8, \quad 7$$

M
$$4\overline{)15} = 3\tfrac{3}{4}, \quad -12, \quad 3$$

N
$$12\overline{)25} = 2\tfrac{1}{12}, \quad -24, \quad 1$$

O
$$8\overline{)27} = 3\tfrac{3}{8}, \quad -24, \quad 3$$

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ROUNDING FRACTIONS AND MIXED NUMBERS TO THE NEAREST WHOLE NUMBER

Video Lesson

blueberry cake:

Half of 11 is $5\frac{1}{2}$. 8 is more than $5\frac{1}{2}$.

$\frac{8}{11}$ is greater than $\frac{1}{2}$ ⟶ round up

$\frac{8}{11}$ ⟶ 1

strawberry cake:

Half of 14 is 7. 5 is less than 7.

$\frac{5}{14}$ is less than $\frac{1}{2}$ ⟶ round down

$5\frac{5}{14}$ ⟶ 5

chocolate cake:

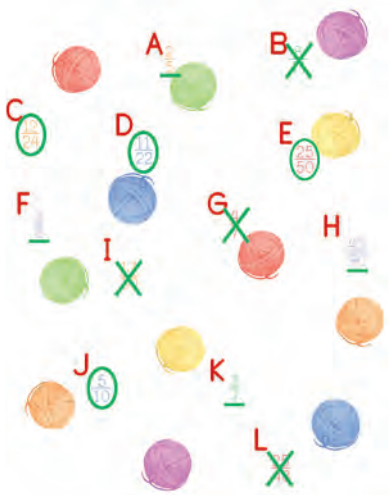
Half of 7 is $3\frac{1}{2}$. 5 is greater than $3\frac{1}{2}$.

$\frac{5}{7}$ is greater than $\frac{1}{2}$ ⟶ round up

$3\frac{5}{7}$ ⟶ 4

Practice

1. Work for each problem is shown below.



A $\frac{2}{5}$: Half of 5 is $2\frac{1}{2}$. 2 is less than $2\frac{1}{2}$.
$\frac{2}{5}$ is less than $\frac{1}{2}$.

B $\frac{8}{11}$: Half of 11 is $5\frac{1}{2}$. 8 is greater than $5\frac{1}{2}$.
$\frac{8}{11}$ is greater than $\frac{1}{2}$.

C $\frac{12}{24}$: Half of 24 is 12.
$\frac{12}{24}$ is equal to $\frac{1}{2}$.

D $\frac{11}{22}$: Half of 22 is 11.
$\frac{11}{22}$ is equal to $\frac{1}{2}$.

E $\frac{25}{50}$: Half of 50 is 25.
$\frac{25}{50}$ is equal to $\frac{1}{2}$.

F $\frac{3}{8}$: Half of 8 is 4. 3 is less than 4.
$\frac{3}{8}$ is less than $\frac{1}{2}$.

G $\frac{4}{7}$: Half of 7 is $3\frac{1}{2}$. 4 is greater than $3\frac{1}{2}$.
$\frac{4}{7}$ is greater than $\frac{1}{2}$.

H $\frac{43}{90}$: Half of 90 is 45. 43 is less than 45.
$\frac{43}{90}$ is less than $\frac{1}{2}$.

I $\frac{17}{30}$: Half of 30 is 15. 17 is greater than 15.
$\frac{17}{30}$ is greater than $\frac{1}{2}$.

J $\frac{5}{10}$: Half of 10 is 5.
$\frac{5}{10}$ is equal to $\frac{1}{2}$.

K $\frac{3}{7}$: Half of 7 is $3\frac{1}{2}$. 3 is less than $3\frac{1}{2}$.
$\frac{3}{7}$ is less than $\frac{1}{2}$.

L $\frac{25}{48}$: Half of 48 is 24. 25 is greater than 24.
$\frac{25}{48}$ is greater than $\frac{1}{2}$.

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TIME REVIEW

Practice

1. Work for each problem on the correct path is shown below.



START Ping wakes up at quarter to 6 in the morning.	6:15 AM Ping plays at a friend's house for half an hour.	6:45 AM Ping swims for 43 minutes.	7:28 AM Ping reads for an hour.	10:15 PM Ping goes to the library for a quarter of an hour.
A 5:45 AM Ping spends 7 minutes getting dressed. →	**B** 5:52 AM Ping plays fetch in the yard with his dog for 15 minutes. →	**C** 6:07 AM Ping practices the violin and reads for an hour and a half. ↓	8:28 AM Ping plays chess with his brother for 20 minutes.	8:48 AM Ping works on an art project. He works until half past 10.
12:00 PM Ping bakes bread for one hour.	11:30 AM Ping breaks for lunch until noon.	**D** 7:37 AM Ping takes care of his pets for 20 minutes. ↓	**M** 6:45 PM Ping reads for one and a half hours. →	**N** 8:15 PM Ping brushes his teeth for 3 minutes. ↓
G 12:30 PM Ping has lunch with his brother. He arrives at violin lessons a half hour later. ↓	**F** 8:27 AM Ping works on math and language arts. He finishes at half past 12 in the afternoon. ←	**E** 7:57 AM Ping eats breakfast with his family for a half hour. ←	**L** 6:15 PM Ping helps clean his home for a half hour. ↑	**O** 8:18 PM Ping gets in bed at quarter after 9 at night. ↓
H 1:00 PM Ping's lesson lasts 1 hour 15 minutes. →	**I** 2:15 PM Ping works on a project for his dad until 5 after 4. →	**J** 4:05 PM Ping helps his mom make dinner. Dinner is ready at half past 5. →	**K** 5:30 PM Ping eats with his family for 45 minutes. ↑	9:15 PM Night night!

A 5:45 AM + 7 minutes = 5:52 AM

B 5:52 AM to 6:00 AM is 8 minutes.
15 - 8 = 7
6:00 AM + 7 minutes = 6:07 AM

C 6:07 AM + 1 hour = 7:07 AM
7:07 AM + 30 minutes = 7:37 AM

D 7:37 AM + 20 minutes = 7:57 AM

E 7:57 AM to 8:00 AM is 3 minutes.
30 - 3 = 27
8:00 AM + 27 minutes = 8:27 AM

F "Half past 12" is 12:30 PM.

G 12:30 PM + 30 minutes = 1:00 PM

H 1:00 PM + 1 hour = 2:00 PM
2:00 PM + 15 minutes = 2:15 PM

I "5 after 4" is 4:05 PM.

J "Half past 5" is 5:30 PM.

K 5:30 to 6:00 PM is 30 minutes.
45 - 30 = 15
6:00 PM + 15 minutes = 6:15 PM

L 6:15 PM + 30 minutes = 6:45 PM

M 6:45 PM + 1 hour = 7:45 PM
7:45 PM to 8:00 PM is 15 minutes.
30 - 15 = 15
8:00 PM + 15 minutes = 8:15 PM

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MATH PUZZLES

Practice

1. Total number of animals: 120 + 30 + 90 + 60 + 60 = 360

Animal	Ratio of Animal to Total Animals
Bison	$\frac{120}{360} = \frac{1}{3}$
Bears	$\frac{30}{360} = \frac{1}{12}$
Birds	$\frac{90}{360} = \frac{1}{4}$
Elk	$\frac{60}{360} = \frac{1}{6}$
Wolves	$\frac{60}{360} = \frac{1}{6}$

2. Trail 1 with obstacles:

$$\begin{array}{r} {\scriptstyle 2} \\ 33.000 \\ 1.209 \\ 0.023 \\ 0.407 \\ 0.023 \\ +\ 0.023 \\ \hline 34.685 \end{array}$$

Trail 2 with obstacles:

$$\begin{array}{r} {\scriptstyle 1} \\ 35.000 \\ 0.210 \\ 0.407 \\ +\ 1.209 \\ \hline 36.826 \end{array}$$

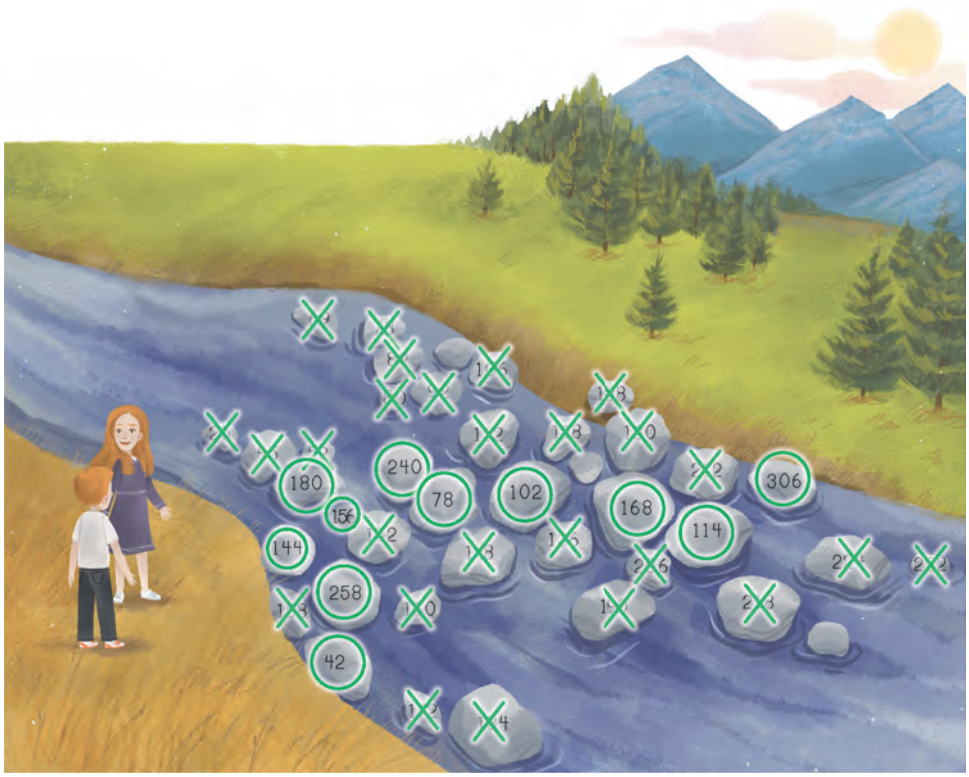
Trail 3 with obstacles:

$$\begin{array}{r} {\scriptstyle 2} \\ 34.000 \\ 0.023 \\ 1.209 \\ 0.407 \\ +\ 0.023 \\ \hline 35.662 \end{array}$$

Time:	Trail:
34.685 min	1
35.662 min	3
36.826 min	2

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3. Detailed work is shown below.



If the number is divisible by both 2 and 3, it is also divisible by 6.

Even numbers are divisible by 2. Cross off all odd numbers. Cross off 69, 73, 89, 25, 45.

Choose a rock to start on and see if it is divisible by 3. Then look for a nearby rock that has not been crossed off and check to see if it is divisible by 3. Continue checking rocks for divisibility by 3.

Students will not need to check all rocks in the stream, but divisibility work for each even number is shown below.

106: 1 + 6 = 7	7 is not divisible by 3, so 106 is not divisible by 3.
112: 1 + 1 + 2 = 4	4 is not divisible by 3, so 112 is not divisible by 3.
80: 8 + 0 = 8	8 is not divisible by 3, so 80 is not divisible by 3.
92: 9 + 2 = 11	11 is not divisible by 3, so 92 is not divisible by 3.
130: 1 + 3 + 0 = 4	4 is not divisible by 3, so 130 is not divisible by 3.
118: 1 + 1 + 8 = 10	10 is not divisible by 3, so 118 is not divisible by 3.
128: 1 + 2 + 8 = 11	11 is not divisible by 3, so 128 is not divisible by 3.
136: 1 + 3 + 6 = 10	10 is not divisible by 3, so 136 is not divisible by 3.
52: 5 + 2 = 7	7 is not divisible by 3, so 52 is not divisible by 3.
240: 2 + 4 + 0 = 6	6 is divisible by 3, so 240 is divisible by 3.
148: 1 + 4 + 8 = 13	13 is not divisible by 3, so 148 is not divisible by 3.
224: 2 + 2 + 4 = 8	8 is not divisible by 3, so 224 is not divisible by 3.
306: 3 + 0 + 6 = 9	9 is divisible by 3, so 306 is divisible by 3.
180: 1 + 8 + 0 = 9	9 is divisible by 3, so 180 is divisible by 3.

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Solid 2:

$V = \pi r^2 h$
$V \approx 3.14 \times (5 \text{ units})^2 \times 10 \text{ units}$
$V \approx 3.14 \times 25 \text{ units}^2 \times 10 \text{ units}$
$V \approx 3.14 \times 250 \text{ units}^3$
$V \approx 785 \text{ units}^3$

Solid 3:

$V = \ell wh$
$V = 7 \text{ units} \times 7 \text{ units} \times 7 \text{ units}$
$V = 49 \text{ units}^2 \times 7 \text{ units}$
$V = 343 \text{ units}^3$

Solid 4:

$V = \pi r^2 h$
$V \approx 3.14 \times (2 \text{ units})^2 \times 13 \text{ units}$
$V \approx 3.14 \times 4 \text{ units}^2 \times 13 \text{ units}$
$V \approx 3.14 \times 52 \text{ units}^3$
$V \approx 163.28 \text{ units}^3$

Solid 5:

$V = \ell wh$
$V = 6 \text{ units} \times 4.9 \text{ units} \times 2 \text{ units}$
$V = 12 \text{ units}^2 \times 4.9 \text{ units}$
$V = 58.8 \text{ units}^3$

Solid 6:

$V = \ell wh$
$V = 7 \text{ units} \times 2.5 \text{ units} \times 9 \text{ units}$
$V = 63 \text{ units}^2 \times 2.5 \text{ units}$
$V = 157.5 \text{ units}^3$

a. **I have a height greater than 6 units.** This could be solids 1, 2, 3, 4, or 6.
I have six faces. This could be solids 1, 3, or 6.
My volume is greater than 60 cubic units. This could be solids 1, 3, or 6.
The measure of my length does not equal my width. This is solid 6.
My number is 6.

b. **I am not a cube.** This could be solids 1, 2, 4, 5, or 6.
I have two circular faces. This could be solids 2 and 4.
My diameter has the same measure as my height. This is solid 2.
My number is 2.

Review

1. a. $\frac{2}{5} \longrightarrow 5\overline{)2.0}$

$$\begin{array}{r} 0.4 \\ 5\overline{)2.0} \\ -20 \\ \hline 0 \end{array}$$

$0.4 \longrightarrow 0.40\%$
$\frac{2}{5} = 0.4 = 40\%$

b. $\frac{17}{5} \longrightarrow 5\overline{)17.0}$

$$\begin{array}{r} 3.4 \\ 5\overline{)17.0} \\ -15 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

$3.4 \longrightarrow 3.40\%$
$\frac{17}{5} = 3.4 = 340\%$

2. $80 + 94 + 96 + 100 + 112 = 482$
There are 5 numbers.

$$\begin{array}{r} 96.4 \\ 5\overline{)482.0} \\ -45 \\ \hline 32 \\ -30 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

mean: 96.4

80, 94, 96, 100, 112
median: 96

80, 94, 96, 100, 112
mode: no mode

BUILD A HOUSE: DAY 2

1. a. Answers will vary.

b. Answers will vary.

c. Answers will vary based on the student's house size. An example calculation for a house that is 30 units long is shown below.

$$\frac{1 \text{ unit}}{3 \text{ ft}} \overset{\times 30}{=} \frac{30 \text{ units}}{\ell}$$

ℓ = 90 ft
Actual length of house: 90 ft

d. Answers will vary based on the student's house size. An example calculation for a house that is 20 units wide is shown below.

$$\frac{1 \text{ unit}}{3 \text{ ft}} \overset{\times 20}{=} \frac{20 \text{ units}}{w}$$

w = 60 ft
Actual width of house: 60 ft

e. Answers will vary based on the student's house size, but the student should have multiplied the length by the width to find the area (in ft^2).

2. a. area

Answers will vary based on the student's living room size. An example calculation for a living room that is 10 ft × 15 ft is shown below.

$A = \ell w$
A = 10 ft × 15 ft
A = 150 ft^2
Amount of carpet: 150 ft^2

150 ft^2 × \$2.04/ft^2 = \$306.00
Cost: \$306.00

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PROBLEM SOLVING

Video Lesson

18 : 54 or $\frac{18}{54}$

$\frac{18}{54} = \frac{1}{3}$ (÷ 18 above and below)

1 : 3 or $\frac{1}{3}$

Practice

1.

twice as many	multiplication (×)
difference	subtraction (−)
of	multiplication (×)
altogether	addition (+)
remaining	subtraction (−)
half	division (÷)
fewer	subtraction (−)
sum	addition (+)
share equally	division (÷)

2. Students should have checked off the box for each instruction as they completed it.

a. **Problem A.** Jon makes cards for people in his neighborhood. ~~Each card costs $0.45 to make.~~ If Jon delivers 8 cards each week, how many cards does he deliver in 12 weeks?

operation(s) needed: multiplication

8 cards per week × 12 weeks = 96 cards

answer: 96 cards

b. **Problem B.** ~~Makenna and Blake made cookies.~~ Makenna made 24 cookies, and Blake made twice as many as Makenna. How many cookies did they make altogether?

operation(s) needed: multiplication, addition

number of cookies made by Blake: 24 × 2 = 48

cookies made altogether:
24 cookies + 48 cookies = 72 cookies

answer: 72 cookies

c. **Problem C.** Marni practiced the cello for 20 minutes on 5 different days last week. ~~She had a recital coming up~~, so she practiced 35 minutes on a sixth day. ~~Her neighborhood recital lasted $1\frac{1}{2}$ hours.~~ For how many minutes altogether did Marni practice the cello last week?

operation(s) needed: multiplication, addition

minutes practiced the first 5 days:
20 minutes × 5 = 100 minutes

total minutes practiced:
100 minutes + 35 minutes = 135 minutes

answer: 135 minutes

d. **Problem D.** ~~Jace loves to play soccer 3 days each week.~~ His team ordered 16 pizzas after a game, and $\frac{1}{4}$ of the pizzas had pepperoni. Of the remaining pizzas, $\frac{1}{2}$ were cheese. How many fewer pepperoni pizzas than cheese pizzas did the team order?

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CAMPGROUND PROBLEM SOLVING

Practice

1. a. 6 people × 5 s'mores per person = 30 s'mores

1 bag of marshmallows makes 40 s'mores. 40 is greater than 30.
marshmallows: 1 package

$\frac{1}{3}$ bar of chocolate per s'more × 30 s'mores = 10 bars of chocolate needed
1 package of chocolate bars contains 8 bars, so 2 packages are needed.
chocolate bars: 2 packages

1 graham cracker per s'more × 30 s'mores = 30 graham crackers needed
3 packages per box × 9 graham crackers per package = 27 graham crackers per box
1 box of graham crackers contains 27 crackers, so 2 boxes are needed.
graham crackers: 2 packages

b. 40 s'mores per bag of marshmallows × 2 bags = 80 s'mores

8 bars of chocolate per package × 3 s'mores per bar of chocolate = 24 s'mores per package
24 s'mores per package × 2 packages = 48 s'mores

3 packages per box × 9 graham crackers per package = 27 graham crackers per box
27 s'mores per box × 2 boxes = 54 s'mores

Chocolate bars have the fewest servings per package, and two packages make 48 s'mores, so with two packages of ingredients, 48 s'mores can be made.

2. Carlos: 5^3 ants = 5 × 5 × 5 ants = 125 ants
Matias: $3^4 + 2^5$ ants = 3 × 3 × 3 × 3 + 2 × 2 × 2 × 2 × 2 ants = 81 ants + 32 ants = 113 ants
125 > 113
125 − 113 = 12
Carlos, 12 ants

3. 6 foil packet dinners × 0.75 potatoes per packet

$$\begin{array}{r} {\scriptstyle 4\ \ 3} \\ 0.75 \\ \times\ \ 6 \\ \hline 4.50 \end{array}$$

4.5 or $4\frac{1}{2}$ potatoes

6 foil packet dinners × 1.75 carrots per packet

$$\begin{array}{r} {\scriptstyle 4\ \ 3} \\ 1.75 \\ \times\ \ 6 \\ \hline 10.50 \end{array}$$

10.5 or $10\frac{1}{2}$ carrots

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COURSE ASSESSMENT

Exponents & Multiplying & Dividing by Powers of 10

1. a. $3^3 = 3 \times 3 \times 3 = 27$

   b. $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

   c. $12^0 = 1$

   d. $86.32 \times 10^5 = 86.32000 \times 10^5 = 8{,}632{,}000$

   e. $9{,}450{,}172 \div 10^6 = 9.450172 \div 10^6 = 9.450172$

Exponents & Multiplying & Dividing by Powers of 10 Additional Practice

1. a. $2^4 = 2 \times 2 \times 2 \times 2 = 16$

   b. $13^0 = 1$

   c. $5^3 = 5 \times 5 \times 5 = 125$

   d. $757{,}100 \div 10^3 = 757.100 \div 10^3 = 757.1$

   e. $5.164 \times 10^4 = 5.1640 \times 10^4 = 51{,}640$

Perfect Squares & Square Roots

1. a. $9^2 = 81$

   b. $6^2 = 36$

   c. $13^2 = 169$

   d. $\sqrt{49} = 7$

   e. $\sqrt{121} = 11$

   f. $\sqrt{144} = 12$

Perfect Squares & Square Roots Additional Practice

1. a. $11^2 = 121$

   b. $8^2 = 64$

   c. $12^2 = 144$

   d. $\sqrt{16} = 4$

   e. $\sqrt{169} = 13$

   f. $\sqrt{64} = 8$

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Adding, Subtracting, Multiplying & Dividing Decimal Numbers

1. a.
$$\begin{array}{r} {\scriptstyle 7\ 9\ 9} \\ \cancel{8}.\cancel{0}\cancel{0}{\scriptstyle 1}0 \\ -\ 3.1\ 4\ 3 \\ \hline 4.8\ 5\ 7 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1} \\ 6.032 \\ \times\quad 1.4 \\ \hline 24128 \\ +\ 60320 \\ \hline 8.4448 \end{array}$$

2. a.
$$3\overline{)9.03} \quad = \quad 3.01$$

b. $45.92 \div 0.21 \longrightarrow 45.92 \div 0.21 \longrightarrow 4592 \div 21$

$$21\overline{)4592.00} \quad = \quad 218.66\ldots = 218.\overline{6}$$

$$\begin{array}{r} -42 \\ \hline 39 \\ -21 \\ \hline 182 \\ -168 \\ \hline 140 \\ -126 \\ \hline 140 \\ -126 \\ \hline 14 \end{array}$$

Adding, Subtracting, Multiplying & Dividing Decimal Numbers Additional Practice

1. a.
$$\begin{array}{r} {\scriptstyle 8\ 9\ 9} \\ \cancel{9}.\cancel{0}\cancel{0}0 \\ -\ 5.2\ 7\ 4 \\ \hline 3.7\ 2\ 6 \end{array}$$

b.
$$\begin{array}{r} {\scriptstyle 1} \\ 5.301 \\ \times\quad 4.2 \\ \hline 10602 \\ +212040 \\ \hline 22.2642 \end{array}$$

2. a.
$$4\overline{)12.08} \quad = \quad 3.02$$

b. $3.5 \div 0.06 \longrightarrow 3.50 \div 0.06 \longrightarrow 350 \div 6$

$$6\overline{)350.00} \quad = \quad 58.33\ldots = 58.\overline{3}$$

$$\begin{array}{r} -30 \\ \hline 50 \\ -48 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

Percent of a Number

1. a. $64 \div 4 = 16$

25% of 64 = 16

b. 1.2×45

$$\begin{array}{r} {\scriptstyle 1} \\ 45 \\ \times\ 1.2 \\ \hline 90 \\ +450 \\ \hline 54.0 \end{array}$$

120% of 45 = 54

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