



Math Summer Learning Packet

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The Math Summer Prep is for newly identified HC students who want to bridge their math skills. Students are working two levels above grade level. For example, a student who has completed fourth grade and starts as a fifth-grade student will study seventh grade math.

Grade 4 Summer Math Guide

❖ How to use this Summer Math Learning Packet

This optional packet provides practice with key math concepts for next year. Please support your child as they use these math resources. Your child does not need to complete every question. The packet is organized by topic and includes Parent Letters with QR codes linked to matching math activities on the SPS HC website. Choose the activities that are most helpful for your child.

❖ Preparing for Math 6 in 4th Grade: Skills to Build On

To support a strong and confident start in math, it's helpful if students are comfortable with the following:

Whole Number & Decimal Foundations

- Fluently add, subtract, multiply, and divide multi-digit whole numbers
- Add and subtract decimals (to the thousandths)
- Understand place value relationships ($\times 10$, $\div 10$, etc.)

Multiplication & Division Fluency

- Know and apply multiplication & division facts (1-12)
- Multiply up to 2-digit \times 2-digit numbers
- Divide multi-digit whole numbers (partial products)

Fraction Understanding & Operations (Critical for Math 6)

- Generate and compare equivalent fractions
- Order and compare fractions
- Convert between improper fractions and fractions greater than 1
- Add and subtract fractions (like and unlike denominators)
- Multiply fractions (including fraction \times whole number)
- Understand fraction division conceptually (not full algorithm fluency yet)

Measurement & Geometry

- Solve problems involving area
- Understand and find volume of rectangular prisms

❖ Suggested Schedule:

Do what works best for your family. While the printable packet and interactive websites do provide some feedback, having an adult there to further explain will help a lot!

Sample 15 min. Schedule:

5 min – warm up with a game* or watch a video to refine a skill

10 min – interactive website or packet work **OR** play a game for 15 minutes*

**If your student does not yet recall multiplication and division facts with fluency (10 – 15 second recall), please have them review their facts daily. The online resource *Multiplication by Heart* has an excellent approach. See link under “Interactive Websites” for details.*

❖ Resources:

Videos: These short videos (~ 5min.) to help students “warm up” to math work.

Games: These are game pages in the print packet, or interactive games accessible online.

Interactive Websites: Khan Academy, Multiplication by Heart, and Polypad related to each topic.

enVision website: enVision math website provides home activities for families.

Grade 5 https://media.pk12ls.com/curriculum/math/family_engage_cc/q05_welcome_en.html

And Grade 4 https://media.pk12ls.com/curriculum/math/family_engage_cc/q04_welcome_en.html

Math Tool Kit: Quick reference sheets students could use in the summer and during the school year.

Add & subtract whole numbers

Scan this QR Code to access additional online resources



Name _____

Fluently Add and Subtract Multi-Digit Whole Numbers

Dear Family,

Your child is learning to fluently add and subtract multi-digit whole numbers. Rounding is used to find values that are close to a correct answer. Rounding is a useful skill to check if an answer is reasonable. For example, if you buy two pairs of pants for \$18 each, the total should be about \$40. If you get a very different answer, then you probably calculated incorrectly. Your child will apply this same logic to numbers greater than or equal to 1,000.

Your child will get a lot of practice doing “mental math,” either by using addition properties or by using strategies such as counting on and compensation. The activity below is an example of the types of problems your child will solve in this topic.

Estimate the Total

Materials paper and pencil

Look through the car sales section of your local newspaper. Have your child select two vehicles he or she would like to purchase. Ask your child to round the price of each car to the nearest thousand. Have your child estimate the total cost for both cars using the rounded values. Repeat the steps for additional pairs of vehicle prices.

Observe Your Child

Ask your child to write a general statement explaining how he or she estimated the costs of the items.



Additional Practice 2-4

Add Greater Numbers

Another Look!



You can add two or more numbers when you line up the numbers by place value. Add one place at a time.

Find $3,456 + 2,139 + 5,547$.

Estimate: $3,000 + 2,000 + 6,000 = 11,000$

Step 1

Line up the numbers by place value.

Add the ones.

Regroup if needed.

$$\begin{array}{r} 3,4\overset{2}{5}6 \\ 2,139 \\ + 5,547 \\ \hline 2 \end{array}$$

Regroup 22 ones as 2 tens and 2 ones.

Step 2

Add the tens and hundreds.

Regroup if needed.

$$\begin{array}{r} 3,4\overset{1}{5}6 \\ 2,139 \\ + 5,547 \\ \hline 142 \end{array}$$

Keep digits in columns as you add.

Step 3

Add the thousands.

Regroup for ten thousands if necessary.

$$\begin{array}{r} 3,4\overset{1}{5}6 \\ 2,139 \\ + 5,547 \\ \hline 11,142 \end{array}$$

11,142 is reasonable because it is close to the estimate of 11,000.

For 1–8, estimate, and then find each sum.

1.
$$\begin{array}{r} 9,945 \\ + 3,343 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 12,566 \\ + 5,532 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 387,969 \\ + 562,031 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 629,979 \\ 294,116 \\ + 75,905 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 227,418 \\ 196,735 \\ + 48,062 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 82,011 \\ 96,489 \\ + 76,988 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 126,267 \\ 15,809 \\ + 8,764 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 45,101 \\ 35,099 \\ + 10,000 \\ \hline \end{array}$$

To check if your answer is reasonable, see if it is close to your estimate.



- 9. Number Sense** Estimate then add to find the combined length of the four highways shown in the table. Is your answer reasonable? Explain.

Lengths of Interstate Highways	
Interstate	Length (miles)
I-90	3,102
I-10	2,460
I-70	2,153
I-80	2,899

- 10.** Highway I-10 is having an extension added on. It will then be 3,000 miles long. How long is the extension?

- 11.** A shipping company delivered 38,728 letters and 41,584 packages. How many total items did the company deliver?

- 12.** The Fatigato family has two cars. One cost \$38,295. The other car cost \$33,187. Which car cost more? Write a comparison.

- 13. Higher Order Thinking** Leona added $206,425 + 128,579 + 314,004$. Should Leona's sum be greater or less than 660,000? Explain.

- 14.** In one week, Katy walks 1,750 meters and runs 1,925 meters. How many meters does Katy walk and run?

 **Assessment Practice**

- 15.** Select all the correct sums.

- $6,384 + 5,649 = 11,923$
 $8,762 + 15,409 = 24,171$
 $39,719 + 27,662 = 67,381$
 $74,982 + 125,637 = 200,519$
 $117,875 + 19,794 = 137,669$

- 16.** Find the sum.

$$\begin{array}{r} 87,462 \\ + 19,750 \\ \hline \end{array}$$

- (A) 106,112
(B) 106,212
(C) 107,912
(D) 107,212



Additional Practice 2-6

Subtract Whole Numbers

Another Look!



To subtract whole numbers with the standard algorithm, subtract each place. Start with ones and regroup when necessary.

Find $7,445 - 1,368$.

Estimate: $7,000 - 1,000 = 6,000$

Step 1

$$\begin{array}{r} 4\overset{3}{4}\overset{15}{5} \\ - 1,368 \\ \hline 7 \end{array}$$

Regroup: 4 tens
5 ones = 3 tens
15 ones

Subtract 8 ones from
15 ones.

Step 2

$$\begin{array}{r} 4\overset{13}{4}\overset{15}{5} \\ - 1,368 \\ \hline 77 \end{array}$$

Regroup: 4 hundreds
3 tens = 3 hundreds
13 tens

Subtract 6 tens from
13 tens.

Step 3

$$\begin{array}{r} 4\overset{13}{3}\overset{15}{5} \\ - 1,368 \\ \hline 077 \end{array}$$

Subtract 3 hundreds
from 3 hundreds.

Step 4

$$\begin{array}{r} 4\overset{13}{3}\overset{15}{5} \\ - 1,368 \\ \hline 6,077 \end{array}$$

Subtract 1 thousand
from 7 thousands.

Check for
reasonableness: The
difference 6,077 is
reasonable because
it is close to the
estimate of 6,000.

For 1–8, find the difference. Estimate to check if your answer is reasonable.

1.
$$\begin{array}{r} 8,737 \\ - 6,754 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 411,765 \\ - 402,120 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 43,429 \\ - 17,101 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 952,746 \\ - 184,524 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 17,863 \\ - 3,747 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 513,363 \\ - 382,895 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 4,226 \\ - 2,958 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 67,451 \\ - 29,609 \\ \hline \end{array}$$



9. The Environmental Club's goal is to collect 9,525 cans by the end of four months. How can you find the number of cans the club needs to collect in September to meet their goal? How many more cans do they need?

Month	Cans Collected
June	1,898
July	2,643
August	2,287



10. Naima's pedometer recorded 43,498 steps in one week. Her goal is 88,942 steps. How many more steps does Naima need to reach her goal?

11. **Critique Reasoning** Mitch wrote the subtraction below. What mistake did Mitch make? What is the correct answer?

$$\begin{array}{r} 657,392 \\ - 434,597 \\ \hline 222,895 \end{array}$$

12. Compare the values of the 2s and 5s in 55,220.

13. **Higher Order Thinking** Find $542 - 399$ using the standard algorithm and another method. Which method do you prefer? Explain why.

Assessment Practice

14. What is the missing digit in the subtraction statement?

$$\begin{array}{r} 8,254 \\ - 3,\square 76 \\ \hline 4,678 \end{array}$$

- (A) 4 (C) 6
(B) 5 (D) 7

15. What is the difference $25,348 - 12,564$?

- (A) 12,748
(B) 12,784
(C) 12,224
(D) 2,784



Additional Practice 2-7

Subtract Whole Numbers

Another Look!

Find $700,402 - 297,354$.

Estimate: $700,000 - 300,000 = 400,000$

Step 1

Regroup

$$\begin{array}{r} 700,402 \\ - 297,354 \\ \hline \end{array}$$

4 hundreds =
3 hundreds +
10 tens

10 tens + 2 ones =
9 tens + 12 ones

Step 2

Subtract

$$\begin{array}{r} 700,402 \\ - 297,354 \\ \hline 048 \end{array}$$

$12 - 4 = 8$ ones

$90 - 50 = 40 =$
4 tens

$300 - 300 =$
0 hundreds

Step 3

Regroup

$$\begin{array}{r} 700,402 \\ - 297,354 \\ \hline 048 \end{array}$$

7 hundred thousands
= 6 hundred
thousands +
10 ten thousands

10 ten thousands =
9 ten thousands +
10 thousands

Step 4

Subtract

$$\begin{array}{r} 700,402 \\ - 297,354 \\ \hline 403,048 \end{array}$$

$10,000 - 7,000 =$
3 thousands

$90,000 - 90,000 =$
0 ten thousands

$600,000 - 200,000 =$
4 hundred thousands

For 1–12, subtract.

1.
$$\begin{array}{r} 61,070 \\ - 4,981 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 5,000 \\ - 2,058 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 815,950 \\ - 423,147 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 90,800 \\ - 37,638 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 102,604 \\ - 6,174 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 22,700 \\ - 20,487 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 40,000 \\ - 29,526 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 600,470 \\ - 307,299 \\ \hline \end{array}$$

9. $8,106 - 2,999$

10. $214,507 - 83,569$

11. $10,400 - 6,392$

12. $45,500 - 9,450$

The difference 403,048 is reasonable because it is close to the estimate of 400,000.



Review Mult/Div facts & multiply/divide whole numbers

Scan this QR Code to access additional online resources



Name _____

Apply Properties: Multiplication Facts for 3, 4, 6, 7, 8

Dear Family,

Your child continues to study multiplication using 3, 4, 6, 7, and 8 as factors. Your child uses multiplication facts he or she already knows to find multiplication facts he or she does not know. For example:

$\left. \begin{array}{l} \square\square\square\square\square\square\square\square \\ \square\square\square\square\square\square\square\square \end{array} \right\}$	$2 \times 8 = 16$	}	$16 + 8 = 24$
$\left. \begin{array}{l} \square\square\square\square\square\square\square\square \\ \square\square\square\square\square\square\square\square \end{array} \right\}$	$1 \times 8 = 8$		
$3 \times 8 = 24$			

Here is an activity you can try together.

Matching Multiplication

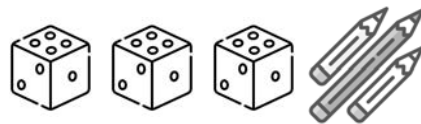
Materials Cards with multiplication facts that have 3, 4, 6, 7, or 8 as a factor and separate cards with the products for each fact

- Each player turns over one factor card and one product card in order to find a multiplication equation match.
- If the cards match, the player keeps the cards and takes another turn. If not, the two cards are returned to the bottom of each set and the next person tries to find a match.
- Continue until all cards have been correctly matched.

Observe Your Child

When two cards match, ask your child to show a way to break the product into the sum of two other multiplication facts (as shown above).

Name _____



Big Blockout

RULES

Play **Big Blockout** by yourself or as a team.

1. Roll three dice.
2. Add 2 dice for the length (or height).
The 3rd die is for height (or length)
3. Color in that array on the board.
Write the equation for that array inside it.

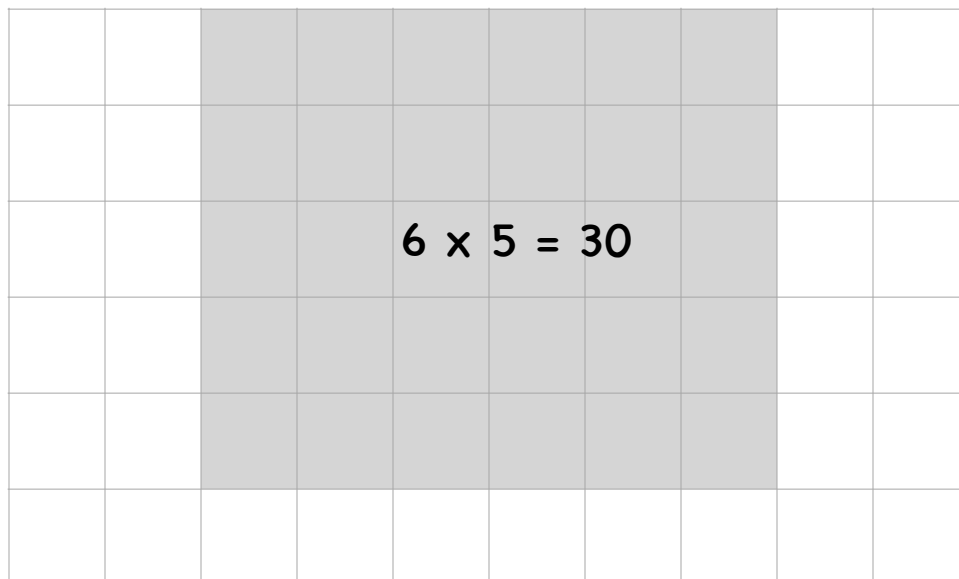
The game ends when you can't fit in an array you rolled.
Your score is the total number of colored squares.

EXAMPLE

I rolled 2, 4, 5.

I made one side of my array $2 + 4 = 6$ long.

I made the other side 5 long



Name _____



Odd Pig Out

Rules

Play on your own, or with a partner.

Roll 2 dice. Multiply the numbers.

If the product is even, you get those points.

Decide whether to roll again OR bank your points and end your turn.

If the product is odd, end your turn and lose all your unbanked points. Play for ten rounds.

Example Round

Roll 1: 2, 4. I write $2 \times 4 = 8$

Roll 2: 5, 6. I write $5 \times 6 = 30$.

No odd products. I stopped there and banked my points. That's 38 points in round 1!

Round	Rolls	Bank
1	$2 \times 4 = 8$	
	$5 \times 6 = 30$	$8 + 30 = 38$

Name _____



Odd Pig Out

50 - okay

100 - good!

200 - great!!

300 - amazing!!!

Final score: _____

Round	Rolls	Bank
1		
2		
3		
4		

Name _____

Round	Rolls	Bank
5		
6		
7		
8		
9		
10		

Name _____

Use Multiplication to Divide: Division Facts

Dear Family,

Your child is using fact families to learn division facts. A fact family has one or two multiplication facts and one or two division facts that use the same three numbers. For example, below is the fact family for 5, 9, and 45.

$$9 \times 5 = 45 \quad 5 \times 9 = 45 \quad 45 \div 9 = 5 \quad 45 \div 5 = 9$$

Your child is learning to divide by the numbers 2 through 9 and to follow rules for 0 and 1. Here is an activity to help your child practice division and multiplication facts.

Fun with Fact Families

- Step 1** Have Player 1 and Player 2 each pick a number from 1 through 9 and say the number aloud. For example, Player 1 says "6" and Player 2 says "8."
- Step 2** Player 1 then says a multiplication fact that includes both numbers. ($6 \times 8 = 48$)
- Step 3** Player 2 says a related division fact. ($48 \div 6 = 8$)
- Step 4** Continue until the entire fact family has been stated; then start again.

Observe Your Child

Write one of the fact families from this activity. Ask your child to circle the numbers that change order in the multiplication facts. Remind your child of the Commutative Property of Multiplication ($a \times b = b \times a$). Discuss how the factors in a multiplication equation can change order. Point out that in the division equations in a fact family, the dividend stays the same.

Name _____



Product Drop

Multiply.

$4 \times 6 =$
 $7 \times 3 =$
 $5 \times 2 =$
 $2 \times 6 =$
 $3 \times 7 =$
 $7 \times 1 =$
 $6 \times 8 =$
 $3 \times 6 =$
 $5 \times 6 =$
 $6 \times 6 =$
 $7 \times 5 =$
 $6 \times 5 =$
 $3 \times 7 =$
 $4 \times 7 =$
 $9 \times 7 =$
 $6 \times 7 =$
 $8 \times 6 =$
 $3 \times 7 =$
 $7 \times 9 =$
 $7 \times 7 =$
 $9 \times 6 =$
 $8 \times 6 =$
 $5 \times 6 =$
 $7 \times 6 =$
 $8 \times 7 =$
 $7 \times 4 =$



Color by using the following product code.

0-10 = purple

21-30 = blue

41-50 = yellow

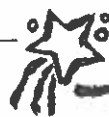
61-70 = pink

11-20 = orange

31-40 = red

51-60 = green

Name _____



Multiplying by 8s and 9s

Climbing to the Top

Multiply.

A.
$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

B.
$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

C.
$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$$

D.
$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ \times 8 \\ \hline \end{array}$$

E.
$$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

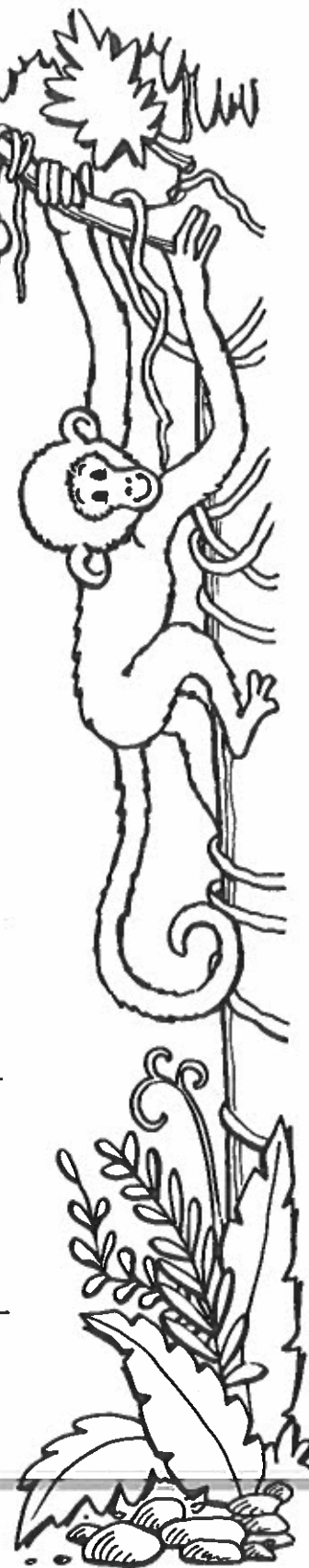
$$\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$



- Circle the problem in Row E with the same product as 2×4 .
 Circle the problem in Row D with the same product as 3×3 .
 Circle the problem in Row C with the same product as 4×4 .
 Circle the problem in Row B with the same product as 6×3 .
 Circle the problem in Row A with the same product as 4×6 .
 Did you find your way to the top?

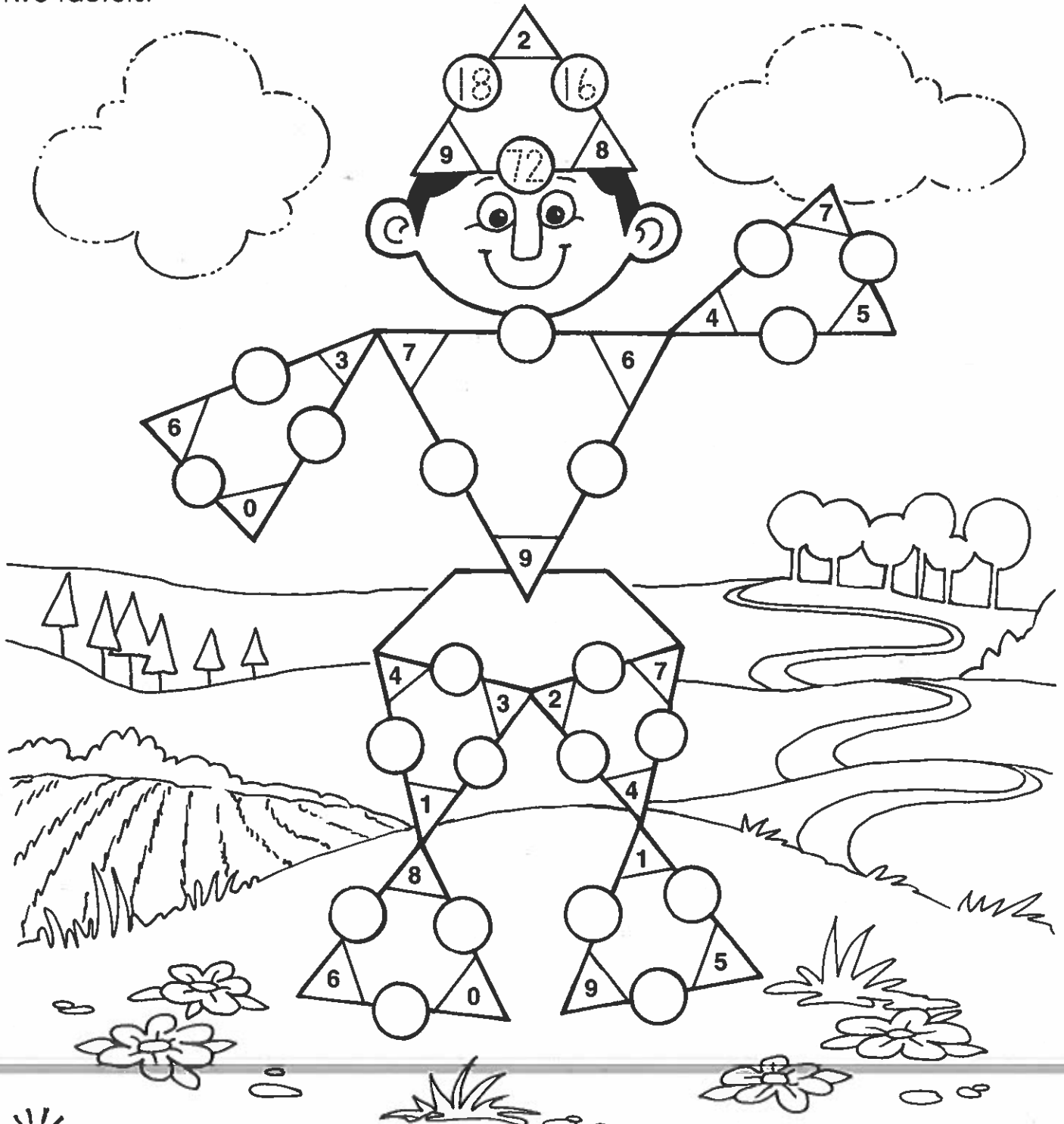


Name _____



The Number Man

Multiply two factors in the triangles. Write each product in the circle between the two factors.



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On another sheet of paper, write two word problems about the Number Man using the multiplication facts 4×4 and 7×3 .

Name _____

Factors and Multiples

Dear Family,

Your child is learning about factors. In this topic, he or she will use arrays and multiplication to find the factors of a given number. The concept is extended to include factor pairs, lists of factors, and prime and composite numbers. Your child will also learn that factors are related to multiples which will prepare him or her for working with fractions.

12 objects can be arranged into six different rectangular arrays.

Arrays	Expressions	Factor Pairs	Factors of 12
	1×12	1 and 12	1, 2, 3, 4, 6, 12
	12×1		
	2×6	2 and 6	
	6×2		
	3×4	3 and 4	
	4×3		

How Many Ways?

Materials uniform objects such as pennies, paper and pencil

Say a number. Have your child show all the ways to arrange that number of objects in rectangular arrays. Record each arrangement as a multiplication expression. Talk about why some arrangements do not work.

Observe Your Child

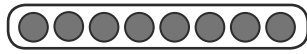
After recording all the possible expressions in the activity above, have your child look for patterns in the factors of the expressions and use that pattern to identify the factor pairs.

Additional Practice 7-2 Factors

Another Look!

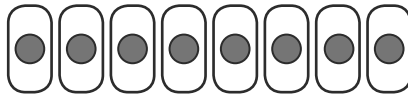
Find the factors and factor pairs for 8.

1 group of 8



1×8

or 8 groups of 1



8×1

2 groups of 4



2×4

or 4 groups of 2



4×2

The factor pairs are 1 and 8, 2 and 4.

The factors of 8 are 1, 2, 4, and 8.

When multiplying two numbers, both numbers are factors of the product.



For **1–6**, write the factor pairs for each number.

1. 75

1 and _____
 _____ and 25
 _____ and 15

2. 28

_____ and 28
 _____ and 14
 4 and _____

3. 46

_____ and 46
 _____ and 23

4. 47

5. 77

6. 23

For **7–15**, write the factors of each number. Use counters to help as needed.

7. 74

8. 58

9. 44

10. 72

11. 57

12. 10

13. 7

14. 60

15. 66





Additional Practice 7-5 Multiples

Another Look!

What are some multiples of 7?

You can use a multiplication chart to find multiples.

Step 1 Find the column (or row) for 7.

Step 2 All the numbers in that column (or row) are multiples of 7.

In the chart, the multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56, and 63.

7, 14, 21, 28, 35, 42, 49, 56, and 63 are multiples of 7 because $1 \times 7 = 7$, $2 \times 7 = 14$, $3 \times 7 = 21$, and so on.

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81



For 1–8, write five multiples of each number.

1. 12

2. 18

3. 40

4. 16

5. 100

6. 25

7. 50

8. 63

For 9–20, tell whether the first number is a multiple of the second number.

9. 21, 7

10. 28, 3

11. 17, 3

12. 20, 4

13. 55, 5

14. 15, 5

15. 26, 4

16. 32, 8

17. 48, 7

18. 60, 2

19. 79, 4

20. 81, 3



Multi-digit multiplication with whole numbers

Scan this QR Code to access additional online resources



Name _____

Use Strategies and Properties to Multiply by 1-Digit Numbers

Dear Family,

Your child is learning strategies to multiply two-, three-, and four-digit numbers by one-digit numbers. He or she is applying strategies involving partial products, including place-value and area models.

These patterns also help your child estimate products. For example, to estimate 4×32 , round 32 to the nearest ten (30) and then multiply ($4 \times 30 = 120$). To find the actual product, your child can use the Distributive Property.

Break apart 32 into 30 and 2. Think of 4×32 as $(4 \times 30) + (4 \times 2)$. So, $120 + 8 = 128$.

Your child can compare the product to the estimate to see if his or her answer is reasonable.

Multiplying Greater Numbers

Materials paper and pencil

Give your child a two-digit by one-digit multiplication problem, such as 5×49 . Ask your child to estimate the product and then solve. He or she can use the Distributive Property to find the product.

Observe Your Child

Ask your child if his or her answer is reasonable when solving a problem multiplying a one-digit number by a two-, three-, or four-digit number. Then have your child explain his or her reasoning.



Additional Practice 3-1

Multiply by Multiples of 10, 100, and 1,000

Another Look!

Use basic facts and either place value or the Associative Property of Multiplication to multiply by multiples of 10, 100, and 1,000.

$$\begin{aligned} 3 \times 70 &= 3 \times 7 \text{ tens} \\ &= 21 \text{ tens} \\ &= 210 \end{aligned}$$

$$\begin{aligned} 9 \times 50 &= 9 \times (5 \times 10) \\ &= (9 \times 5) \times 10 \\ &= 45 \times 10 \\ &= 450 \end{aligned}$$

$$\begin{aligned} 3 \times 700 &= 3 \times 7 \text{ hundreds} \\ &= 21 \text{ hundreds} \\ &= 2,100 \end{aligned}$$

$$\begin{aligned} 9 \times 500 &= 9 \times (5 \times 100) \\ &= (9 \times 5) \times 100 \\ &= 45 \times 100 \\ &= 4,500 \end{aligned}$$

$$\begin{aligned} 3 \times 7,000 &= 3 \times 7 \text{ thousands} \\ &= 21 \text{ thousands} \\ &= 21,000 \end{aligned}$$

$$\begin{aligned} 9 \times 5,000 &= 9 \times (5 \times 1,000) \\ &= (9 \times 5) \times 1,000 \\ &= 45 \times 1,000 \\ &= 45,000 \end{aligned}$$

For 1–18, find each product.

1. $8 \times 20 =$ _____
 $8 \times 200 =$ _____
 $8 \times 2,000 =$ _____

2. $9 \times 40 =$ _____
 $9 \times 400 =$ _____
 $9 \times 4,000 =$ _____

3. $3 \times 90 =$ _____
 $3 \times 900 =$ _____
 $3 \times 9,000 =$ _____

4. $7 \times 60 =$ _____
 $7 \times 600 =$ _____
 $7 \times 6,000 =$ _____

5. $5 \times 70 =$ _____
 $5 \times 700 =$ _____
 $5 \times 7,000 =$ _____

6. $2 \times 40 =$ _____
 $2 \times 400 =$ _____
 $2 \times 4,000 =$ _____

7. 3×40

8. $3,000 \times 9$

9. 80×3

10. $8,000 \times 5$

11. $8 \times 7,000$

12. 2×90

13. $3,000 \times 4$

14. $7 \times 6,000$

15. $5,000 \times 6$

16. 2×800

17. 90×8

18. $3,000 \times 6$



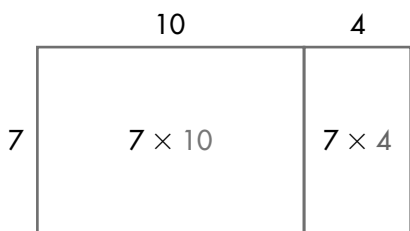
Additional Practice 3-4

Use Area Models and Partial Products to Multiply

Another Look!

The city board wants to build a new fountain for a downtown park. They agree to set aside an area that is 7 yards wide and 14 yards long. What is the area for the new fountain?

Area models and partial products are useful tools to solve multiplication problems.



Estimate: 7×14 is about $7 \times 10 = 70$.

$$7 \times 10 = 70$$

$$7 \times 4 = 28$$

$$70 + 28 = 98$$

$$\begin{array}{r}
 14 \\
 \times 7 \\
 \hline
 28 \quad 7 \times 4 \text{ ones} \\
 + 70 \quad 7 \times 1 \text{ ten} \\
 \hline
 98
 \end{array}$$

The area for the new fountain is 98 square yards.

The product, 98, is close to the estimate of 70. The answer is reasonable.

For 1–4, use the area model and partial products.

1.

40	6

$$\begin{array}{r}
 46 \\
 \times 8 \\
 \hline
 \end{array}$$

2.

70	9

$$\begin{array}{r}
 79 \\
 \times 3 \\
 \hline
 \end{array}$$

3.

800	90	5

$$\begin{array}{r}
 895 \\
 \times 9 \\
 \hline
 \end{array}$$

4.

600	50	1

$$\begin{array}{r}
 651 \\
 \times 6 \\
 \hline
 \end{array}$$

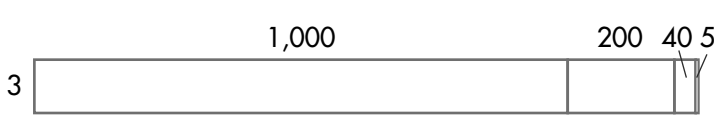


Another Look!

Three groups of 1,245 students attended the concert. How many students attended the concert?

You can use area models and partial products to find the products of greater numbers.

Find $3 \times 1,245$.



$$\begin{array}{r} 1,245 \\ \times \quad 3 \\ \hline 15 \\ 120 \\ 600 \\ + 3,000 \\ \hline 3,735 \end{array}$$

3,735 students attended the concert.



Additional Practice 3-5
More Use Area Models and Partial Products to Multiply

For 1–6, multiply. Use the area model and partial products.

1. $\begin{array}{r} 6317 \\ \times \quad 9 \\ \hline \end{array}$

2. $\begin{array}{r} 3,933 \\ \times \quad 4 \\ \hline \end{array}$

3. $\begin{array}{r} 1,619 \\ \times \quad 7 \\ \hline \end{array}$

4. $\begin{array}{r} 4,265 \\ \times \quad 5 \\ \hline \end{array}$

5. $\begin{array}{r} 2,111 \\ \times \quad 5 \\ \hline \end{array}$

6. $\begin{array}{r} 4,231 \\ \times \quad 2 \\ \hline \end{array}$



Divide multi-digit whole numbers

Scan this QR Code to access additional online resources



Name _____

Use Strategies and Properties to Divide by 1-Digit Numbers

Dear Family,

In this topic, your child will learn how to divide by one-digit divisors. Learning this skill will require his or her understanding of estimating quotients and, of remainders, and of connecting models and symbols. You can expect to see work that provides practice in dividing whole numbers by one-digit divisors using strategies other than the standard algorithm and checking that the answer is reasonable using estimation.

Variations on a Theme

Materials pencil, index cards

Write a \div symbol and an $=$ symbol on two index cards. Write the numbers 2 to 9 on separate index cards. Write eight different two-, three-, or four-digit numbers on separate index cards. Place the one-digit and multi-digit cards face down in separate piles. Take turns choosing one card from each pile and using the symbol cards to create a division equation. Take turns solving the problems. If the solution is correct, the person solving the problem earns points equal to the remainder. Take turns until all the cards have been used. The person with the most points wins. Shuffle both stacks of cards and play again.

Observe Your Child

During one of your child's turns, ask your child to explain how to check that the quotient is reasonable.



Additional Practice 5-1 Mental Math: Find Quotients

Another Look!



When dividing numbers that end in zero, use basic division facts and place value to help divide mentally.

Find $210 \div 7$.

What is the basic fact?

$$21 \div 7 = 3$$

21 tens \div **7** = 3 tens or 30.

$$210 \div 7 = 30$$

Find $4,200 \div 6$.

What is the basic fact?

$$42 \div 6 = 7$$

42 hundreds \div **6** = 7 hundreds or 700.

$$4,200 \div 6 = 700$$

Leveled Practice For 1–20, use basic facts, patterns, or mental math to divide.

1. $25 \div 5 =$ _____

2. $14 \div 2 =$ _____

3. $30 \div 5 =$ _____

4. $16 \div 4 =$ _____

$250 \div 5 =$ _____

$140 \div 2 =$ _____

$300 \div 5 =$ _____

$160 \div 4 =$ _____

$2,500 \div 5 =$ _____

$1,400 \div 2 =$ _____

$3,000 \div 5 =$ _____

$1,600 \div 4 =$ _____

5. $120 \div 6$

6. $720 \div 9$

7. $200 \div 4$

8. $2,800 \div 7$

9. $5,000 \div 5$

10. $240 \div 8$

11. $3,600 \div 4$

12. $1,600 \div 2$

13. $4,200 \div 7$

14. $640 \div 8$

15. $2,000 \div 5$

16. $320 \div 8$

17. $810 \div 9$

18. $270 \div 3$

19. $1,200 \div 2$

20. $300 \div 6$





Additional Practice 5-2 Mental Math: Estimate Quotients

Another Look!

Estimate $460 \div 9$.

Here are two
ways to estimate
quotients.



One Way

Use compatible numbers.

What number close to 460
can be easily divided by 9?

Try 450.

$$450 \div 9 = 50$$

$460 \div 9$ is about 50.

Another Way

Use multiplication.

Nine times what number
is about 460?

$$9 \times 5 = 45, \text{ so } 9 \times 50 = 450.$$

$460 \div 9$ is about 50.

For **1–20**, estimate each quotient. Show your work.

1. $165 \div 4$

2. $35 \div 4$

3. $715 \div 9$

4. $490 \div 8$

5. $512 \div 5$

6. $652 \div 8$

7. $790 \div 9$

8. $200 \div 7$

9. $311 \div 6$

10. $162 \div 2$

11. $418 \div 6$

12. $554 \div 7$

13. $92 \div 3$

14. $351 \div 7$

15. $497 \div 5$

16. $61 \div 2$

17. $202 \div 2$

18. $153 \div 3$

19. $98 \div 9$

20. $174 \div 9$



Additional Practice 5-7

Use Sharing to Divide

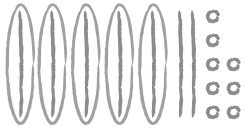
Another Look!

Find $78 \div 5$.

You can draw pictures to help solve division problems.



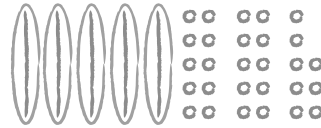
First, divide the tens.



There is 1 ten in each of the 5 groups.

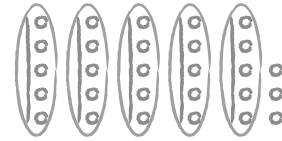
$$78 \div 5 = 15 \text{ R}3$$

Then, unbundle the 2 tens for 20 ones.



20 ones and 8 ones are equal to 28 ones.

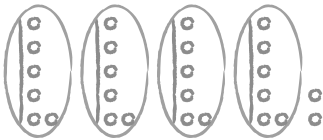
Finally, divide the ones.



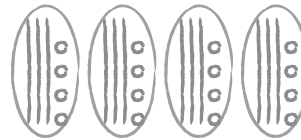
Each of the 5 groups has 1 ten and 5 ones. There are 3 ones remaining.

For 1–8, Use place-value blocks or a drawing to divide. Record remainders.

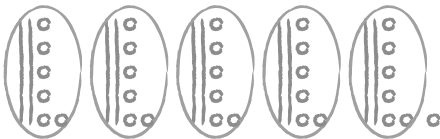
1. $66 \div \underline{\quad} = \underline{\quad} \text{ R}2$



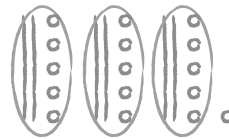
2. $136 \div 4 = \underline{\quad}$



3. $131 \div \underline{\quad} = \underline{\quad} \text{ R}1$



4. $76 \div \underline{\quad} = \underline{\quad} \text{ R} \underline{\quad}$



5. $140 \div 6$

6. $95 \div 2$

7. $96 \div 8$

8. $51 \div 2$

Fractions & Mixed numbers

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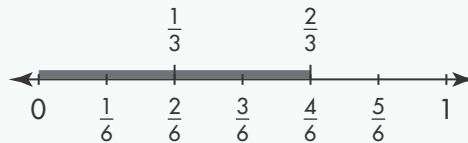


Name _____

Extend Understanding of Fraction Equivalence and Ordering

Dear Family,

Your child is learning about fractions. An important part of this topic is identifying equivalent fractions. Equivalent fractions name the same part of a whole. The number line below shows $\frac{1}{3}$ and $\frac{2}{6}$ are equivalent fractions, and $\frac{2}{3}$ and $\frac{4}{6}$ are equivalent fractions because they are the same distance from zero.



The concept of equivalent fractions will allow your child to compare fractions in this topic as well as add and subtract fractions in a later topic.

Fraction Match

Materials index cards and pencil

Make a set of fraction cards out of index cards or cut out those shown below. Each player picks 8 fraction cards. Have your child lay one card as the starting card in the center of the table. Players take turns connecting equivalent fractions to the starting card until all cards have been played or no further connections are possible.

$\frac{1}{2}$	$\frac{2}{4}$	$\frac{3}{6}$	$\frac{4}{8}$	$\frac{5}{10}$	$\frac{6}{12}$	$\frac{2}{3}$	$\frac{1}{3}$
$\frac{2}{6}$	$\frac{4}{12}$	$\frac{1}{4}$	$\frac{2}{8}$	$\frac{3}{12}$	$\frac{4}{6}$	$\frac{3}{4}$	$\frac{9}{12}$

Observe Your Child

Ask your child to create more fraction cards to extend the game.

Additional Practice 8-1

Equivalent Fractions: Area Models

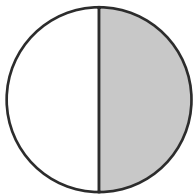
Another Look!

Use an area model to find two fractions equivalent to $\frac{1}{2}$.

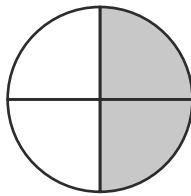


Many fractions are equivalent to $\frac{1}{2}$.

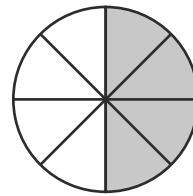
The circle is divided into 2 equal parts. The shaded part represents $\frac{1}{2}$.



Divide the circle into 4 equal parts. The shaded part represents $\frac{2}{4}$.

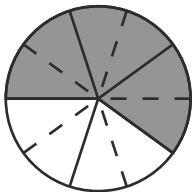


Divide the circle into 8 equal parts. The shaded part represents $\frac{4}{8}$.

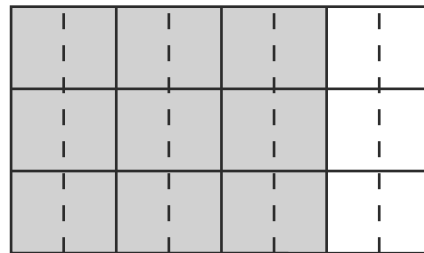


$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ are equivalent fractions.

1. Write a fraction equivalent to $\frac{3}{5}$.



2. Write two fractions equivalent to $\frac{9}{12}$.



For 3–10, draw an area model or use fraction strips to solve each problem.

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

4. $\frac{3}{6} = \frac{\square}{12}$

5. $\frac{4}{10} = \frac{\square}{5}$

6. $\frac{3}{4} = \frac{\square}{8}$

7. $\frac{5}{10} = \frac{1}{\square}$

8. $\frac{4}{6} = \frac{\square}{12}$

9. $\frac{5}{5} = \frac{\square}{10}$

10. $\frac{1}{2} = \frac{6}{\square}$

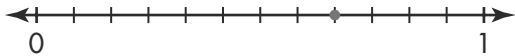


Additional Practice 8-2

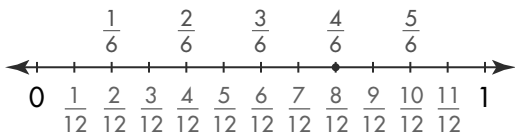
Equivalent Fractions: Number Lines

Another Look!

You can write equivalent fractions for a point shown on a number line.



Label the number line in two different ways.



The point is at $\frac{4}{6}$.

The point is at $\frac{8}{12}$.

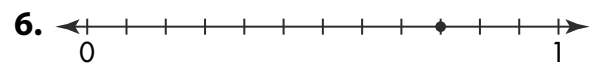
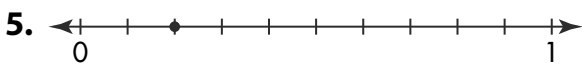
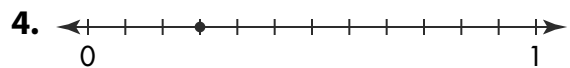
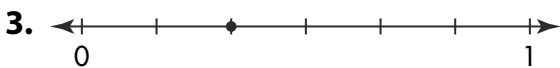
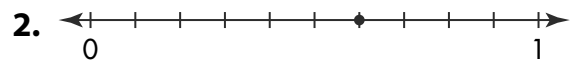
$$\frac{4}{6} = \frac{8}{12}$$

$\frac{4}{6}$ and $\frac{8}{12}$ are equivalent fractions.

Equivalent fractions represent the same fractional amount of the same whole or same-sized wholes.



For 1–6, write two fractions for the point on each number line.



7. Are $\frac{3}{8}$ and $\frac{3}{4}$ equivalent fractions? Draw a number line to decide.

8. Draw a number line to show $\frac{1}{4}$ and $\frac{2}{8}$ are equivalent.



Practice



Video



Tools



Games

Additional Practice 8-5

Use Benchmarks to Compare Fractions

Another Look!

Compare $\frac{6}{8}$ and $\frac{5}{12}$.

One Way

Compare the fractions to $\frac{1}{2}$.

$$\frac{6}{8} > \frac{1}{2} \quad \frac{5}{12} < \frac{1}{2}$$

$$\frac{6}{8} > \frac{5}{12}$$

Another Way

Compare the fractions to 0 and to 1.

$\frac{6}{8}$ is closer to 1 than to 0.

$\frac{5}{12}$ is closer to 0 than to 1.

$$\frac{6}{8} > \frac{5}{12}$$

Benchmarks can help you compare fractions.



For 1–6, write three fractions that match each statement.

- Fractions equal to $\frac{1}{2}$
- Fractions less than $\frac{1}{2}$
- Fractions greater than 1
- Fractions closer to 1 than to 0
- Fractions closer to 0 than to 1
- Fractions greater than $\frac{1}{2}$

For 7–18, compare using benchmark fractions or 1. Then write $>$, $<$, or $=$.

- $\frac{3}{4} \bigcirc \frac{2}{10}$
- $\frac{4}{12} \bigcirc \frac{7}{10}$
- $\frac{5}{10} \bigcirc \frac{1}{2}$
- $\frac{3}{8} \bigcirc \frac{6}{12}$
- $\frac{7}{8} \bigcirc \frac{2}{5}$
- $\frac{15}{12} \bigcirc \frac{5}{6}$
- $\frac{5}{5} \bigcirc \frac{4}{4}$
- $\frac{4}{6} \bigcirc \frac{1}{3}$
- $\frac{8}{10} \bigcirc \frac{3}{5}$
- $\frac{5}{8} \bigcirc \frac{6}{12}$
- $\frac{48}{12} \bigcirc \frac{10}{5}$
- $\frac{9}{12} \bigcirc \frac{5}{6}$



Add, subtract fractions with like and unlike denominators

Scan this QR Code to access additional online resources



Name _____

Understand Addition and Subtraction of Fractions

Dear Family,

In this topic, your child will learn to add and subtract fractions with like denominators, or denominators that are the same. To add fractions with like denominators, add the numerators and write the sum over the like denominator.

For example, $\frac{3}{12} + \frac{8}{12} = \frac{11}{12}$.

Your child will also learn to use fraction strips and number lines to represent the addition and subtraction of fractions with like denominators.

Here are some activities that you can do to help your child understand adding and subtracting fractions with like denominators.

Fraction Writing

Materials paper and pencil

Step 1 Write $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{1}{8}$, and $\frac{1}{12}$ on a piece of paper.

Step 2 Have your child name the fractions that have a common denominator and explain how to add those fractions.

Fraction Toss-Off

Materials number cube labeled 1–6

Step 1 Toss a number cube once to generate a numerator and once or twice to generate a one-digit or two-digit denominator. Repeat to create several fractions.

Step 2 Have your child decompose each fraction in two or more ways.

Observe Your Child

Ask your child to represent the addition in the Fraction Writing activity with bar diagrams and equations.



Practice



Video



Tools



Games

Additional Practice 8-6

Compare Fractions

Another Look!

Compare $\frac{2}{3}$ and $\frac{1}{2}$.

One Way

Rename one or both fractions so they both have the same denominator.

Rename both $\frac{2}{3}$ and $\frac{1}{2}$.

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

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

$$\frac{4}{6} > \frac{3}{6}, \text{ so } \frac{2}{3} > \frac{1}{2}.$$

Another Way

Rename one or both fractions so they both have the same numerator.

Leave $\frac{2}{3}$ alone. Rename $\frac{1}{2}$.

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

$$\frac{2}{3} > \frac{2}{4}, \text{ so } \frac{2}{3} > \frac{1}{2}.$$

When two fractions have the same numerator, the one with the lesser denominator is the greater fraction.



For **1–16**, find equivalent fractions to compare. Then write $>$, $<$, or $=$.

1. $\frac{5}{6} \bigcirc \frac{2}{3}$

2. $\frac{1}{5} \bigcirc \frac{2}{8}$

3. $\frac{9}{10} \bigcirc \frac{3}{4}$

4. $\frac{3}{4} \bigcirc \frac{2}{8}$

5. $\frac{7}{8} \bigcirc \frac{1}{2}$

6. $\frac{2}{5} \bigcirc \frac{2}{6}$

7. $\frac{1}{3} \bigcirc \frac{3}{8}$

8. $\frac{2}{10} \bigcirc \frac{3}{5}$

9. $\frac{8}{10} \bigcirc \frac{3}{4}$

10. $\frac{3}{8} \bigcirc \frac{9}{12}$

11. $\frac{2}{3} \bigcirc \frac{10}{12}$

12. $\frac{7}{8} \bigcirc \frac{3}{4}$

13. $\frac{3}{4} \bigcirc \frac{7}{8}$

14. $\frac{2}{4} \bigcirc \frac{4}{8}$

15. $\frac{6}{8} \bigcirc \frac{8}{12}$

16. $\frac{1}{3} \bigcirc \frac{4}{8}$

For **17–18**, use the table at the right. The same number of students attended school each day.

17. Did more students buy lunch on Thursday or on Wednesday?

18. Did more students buy lunch on Monday or on Friday?

DATA

Day

Fraction of Students
Buying Lunch

Monday

 $\frac{1}{2}$

Tuesday

 $\frac{2}{5}$

Wednesday

 $\frac{3}{4}$

Thursday

 $\frac{5}{8}$

Friday

 $\frac{4}{6}$ 

Additional Practice 9-7

Model Addition and Subtraction of Mixed Numbers

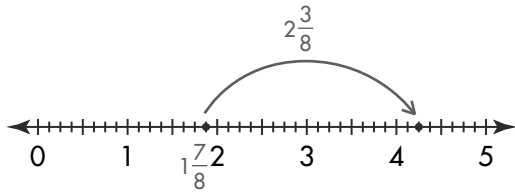


Another Look!

You can use a tool such as fraction strips or number lines to show the addition and subtraction of mixed numbers.

Use a number line to find $1\frac{7}{8} + 2\frac{3}{8}$.

Use a number line for eighths. Start at $1\frac{7}{8}$.



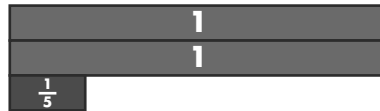
To add, move $2\frac{3}{8}$ to the right.

Write the sum as a fraction or a mixed number.

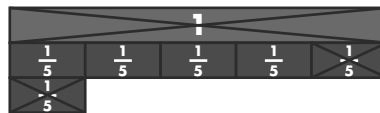
So, $1\frac{7}{8} + 2\frac{3}{8} = 4\frac{2}{8}$.

Use fraction strips to find $2\frac{1}{5} - 1\frac{2}{5}$.

Model the number you are subtracting from, $2\frac{1}{5}$.



Rename $2\frac{1}{5}$ as $1\frac{6}{5}$. Cross out one whole and $\frac{2}{5}$ to show subtracting $1\frac{2}{5}$.

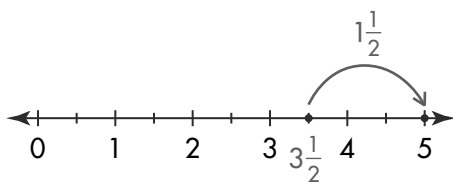


Write the difference as a fraction.

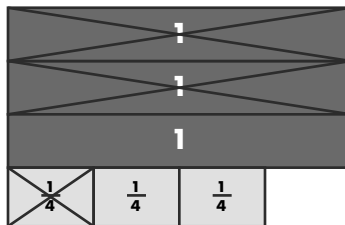
So, $2\frac{1}{5} - 1\frac{2}{5} = \frac{4}{5}$.

For 1–9, use a tool to find each sum or difference.

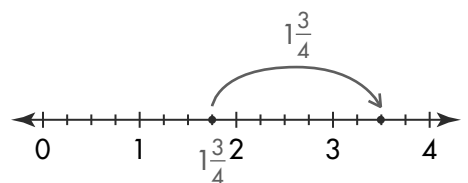
1. $3\frac{1}{2} + 1\frac{1}{2}$



2. $3\frac{3}{4} - 2\frac{1}{4}$



3. $1\frac{3}{4} + 1\frac{3}{4}$



4. $3\frac{4}{5} - 1\frac{2}{5}$

5. $5\frac{2}{6} + 3\frac{5}{6}$

6. $10\frac{2}{8} - 7\frac{5}{8}$

7. $2\frac{5}{12} + 4\frac{3}{12}$

8. $12\frac{1}{3} - 5\frac{2}{3}$

9. $2\frac{2}{4} + 6\frac{3}{4}$





Additional Practice 9-1

Model Addition of Fractions

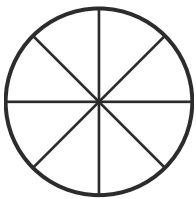
Another Look!

Eight friends went out to lunch. Four of them had pizza. Two had hamburgers and two had soup. What fraction of the group had either pizza or soup?

You can use a circle fraction model to add fractions.

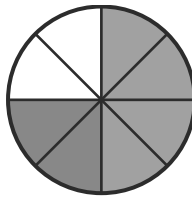


Divide a circle into eighths to represent each of the 8 people in the group.



Four people had pizza. Shade 4 of the sections to represent $\frac{4}{8}$.

Two people had soup. Shade 2 more sections to represent $\frac{2}{8}$.



Count the number of $\frac{1}{8}$ sections. There are six $\frac{1}{8}$ sections shaded. So, $\frac{6}{8}$ of the group had either pizza or soup.

$$\frac{4}{8} + \frac{2}{8} = \frac{6}{8}$$

Add the numerators. Then write the sum over the like denominator.

For 1–12, find each sum. Use a tool.

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

2. $\frac{4}{6} + \frac{1}{6}$

3. $\frac{5}{8} + \frac{2}{8}$

4. $\frac{2}{12} + \frac{2}{12}$

5. $\frac{2}{5} + \frac{3}{5}$

6. $\frac{2}{10} + \frac{3}{10}$

7. $\frac{5}{8} + \frac{3}{8}$

8. $\frac{3}{10} + \frac{1}{10}$

9. $\frac{3}{4} + \frac{1}{4}$

10. $\frac{5}{10} + \frac{4}{10}$

11. $\frac{1}{6} + \frac{1}{6} + \frac{1}{6}$

12. $\frac{1}{12} + \frac{5}{12} + \frac{2}{12}$





Additional Practice 9-3

Add Fractions with Like Denominators

Another Look!

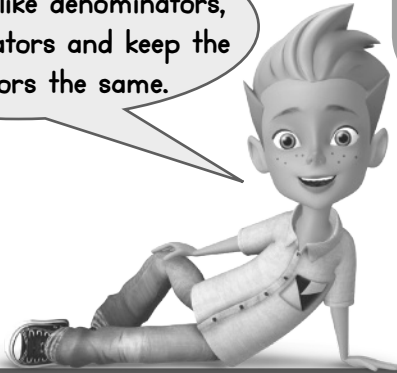
Find $\frac{4}{8} + \frac{2}{8}$.

When you add fractions with like denominators, add the numerators and keep the denominators the same.

$$\frac{4}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} \quad \frac{2}{8} = \frac{1}{8} + \frac{1}{8}$$



$$\frac{4}{8} + \frac{2}{8} = \frac{4+2}{8} = \frac{6}{8}$$



For **1–18**, find each sum. Use drawings or fraction strips as needed.

1. $\frac{1}{3} + \frac{1}{3}$

2. $\frac{3}{10} + \frac{6}{10}$

3. $\frac{5}{12} + \frac{2}{12}$

4. $\frac{3}{12} + \frac{7}{12}$

5. $\frac{5}{10} + \frac{3}{10}$

6. $\frac{2}{8} + \frac{4}{8}$

7. $\frac{7}{10} + \frac{3}{10}$

8. $\frac{1}{8} + \frac{6}{8}$

9. $\frac{1}{10} + \frac{5}{10}$

10. $\frac{4}{5} + \frac{1}{5}$

11. $\frac{2}{8} + \frac{6}{8}$

12. $\frac{6}{10} + 0$

13. $\frac{1}{5} + \frac{2}{5} + \frac{4}{5}$

14. $\frac{2}{8} + \frac{1}{8} + \frac{12}{8}$

15. $\frac{2}{6} + \frac{10}{6}$

16. $\frac{20}{100} + \frac{25}{100} + \frac{25}{100}$

17. $\frac{2}{10} + \frac{6}{10} + \frac{1}{10}$

18. $\frac{10}{10} + \frac{10}{10} + \frac{10}{10}$



Additional Practice 9-4

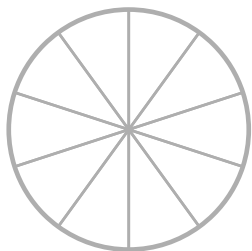
Model Subtraction of Fractions

Another Look!

Kimberly cut a pizza into 10 equal slices. She ate two of the slices. What fraction of the pizza is left?
Remember, $\frac{10}{10} = 1$ whole pizza.

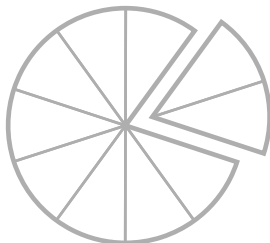
Step 1

Divide a circle into tenths to show the pizza cut into 10 slices.



Step 2

Take away the 2 slices or $\frac{2}{10}$ of the pizza that Kimberly ate.



Step 3

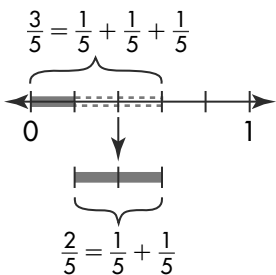
Count the remaining slices and write the subtraction.

$$\frac{10}{10} - \frac{2}{10} = \frac{8}{10}$$

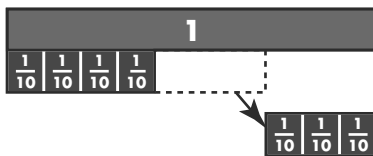
$\frac{8}{10}$ of the pizza is left.

For 1–12, find each difference. Use fraction strips or other tools as needed.

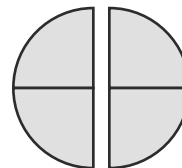
1. $\frac{3}{5} - \frac{2}{5}$



2. $\frac{7}{10} - \frac{3}{10}$



3. $\frac{4}{4} - \frac{2}{4}$



4. $\frac{8}{10} - \frac{5}{10}$

5. $\frac{6}{6} - \frac{3}{6}$

6. $\frac{11}{12} - \frac{7}{12}$

7. $\frac{5}{6} - \frac{2}{6}$

8. $\frac{4}{8} - \frac{2}{8}$

9. $\frac{11}{12} - \frac{8}{12}$

10. $\frac{9}{8} - \frac{2}{8}$

11. $\frac{24}{4} - \frac{18}{4}$

12. $\frac{30}{10} - \frac{20}{10}$



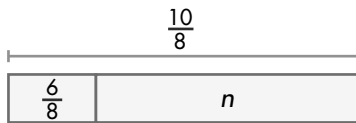


Additional Practice 9-5

Subtract Fractions with Like Denominators

Another Look!

Flora has $\frac{10}{8}$ cups of flour. She uses $\frac{6}{8}$ cup to make dough. How much flour, n , does Flora have left?

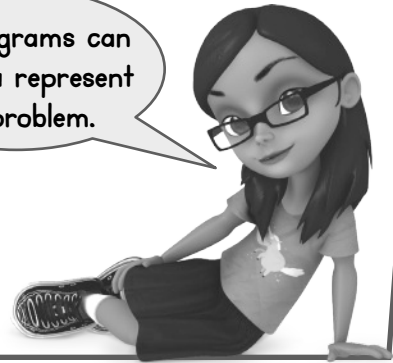


Subtract the numerators. Write the difference over the like denominator.

$$n = \frac{10}{8} - \frac{6}{8}, n = \frac{4}{8}$$

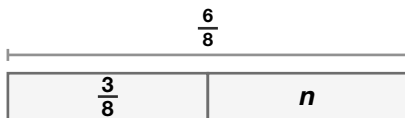
Flora has $\frac{4}{8}$ cup flour left.

Bar diagrams can help you represent the problem.

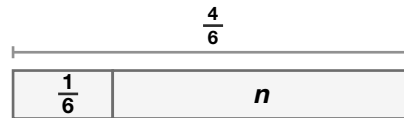


For **1–10**, subtract the fractions.

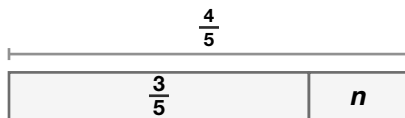
1. $\frac{6}{8} - \frac{3}{8}$



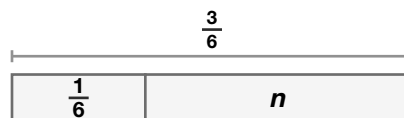
2. $\frac{4}{6} - \frac{1}{6}$



3. $\frac{4}{5} - \frac{3}{5}$



4. $\frac{3}{6} - \frac{1}{6}$



5. $\frac{97}{100} - \frac{40}{100}$

6. $\frac{5}{8} - \frac{1}{8}$

7. $\frac{10}{10} - \frac{9}{10}$

8. $\frac{17}{12} - \frac{5}{12}$

9. $\frac{33}{100} - \frac{4}{100}$

10. $\frac{50}{100} - \frac{10}{100}$



Multiply, divide fractions

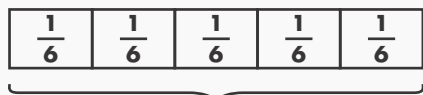
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Extend Multiplication Concepts to Fractions

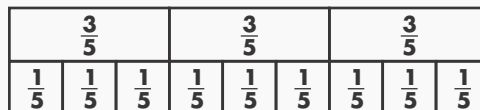
Dear Family,

Your child is extending his or her previous understanding of multiplication and fractions to multiply a fraction by a whole number. Your child will strengthen his or her understanding of fractions by comparing non-unit fractions, such as $\frac{5}{6}$, to their corresponding unit fractions, such as $\frac{1}{6}$. Your child will generalize that $\frac{5}{6}$ is a multiple of $\frac{1}{6}$, because $\frac{5}{6} = 5 \times \frac{1}{6}$. Your child will further extend this understanding to multiply whole numbers by fractions.



5 equal groups of $\frac{1}{6}$

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



$$\begin{aligned} 3 \times \frac{3}{5} &= 3 \times \left(3 \times \frac{1}{5}\right) \\ &= 9 \times \frac{1}{5} \\ &= \frac{9}{5} \text{ or } 1\frac{4}{5} \end{aligned}$$

Multiply Whole Numbers and Fractions

Materials number cube, paper, pencil

Have your child roll the number cube twice. If he or she rolls the same number, roll again until two different numbers are rolled. Create a fraction using the two numbers. The lesser number should be written as the numerator and the greater number should be written as the denominator. Have your child identify whether the fraction is a unit fraction. Roll the number cube again. Multiply the fraction by this number. Write the equation for each.

For example:

$$4 \times \frac{3}{5} = \frac{12}{5} = \frac{5}{5} + \frac{5}{5} + \frac{2}{5} = 2\frac{2}{5}$$

Observe Your Child

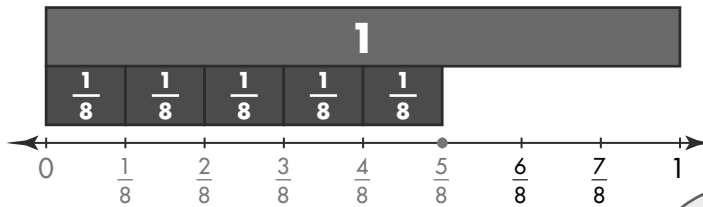
Have him or her draw a model of the multiplication, similar to the one shown above for each of the problems created from the activity.

Additional Practice 10-1

Fractions as Multiples of Unit Fractions

Another Look!

Use fraction strips to show $\frac{5}{8}$ as a multiple of a unit fraction.



Write an equation.

$$\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

$$\frac{5}{8} = 5 \times \frac{1}{8}$$

You can write any fraction as a multiple of a unit fraction.

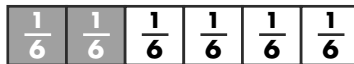


For **1–15**, write each fraction as a multiple of a unit fraction. Use a tool as needed.

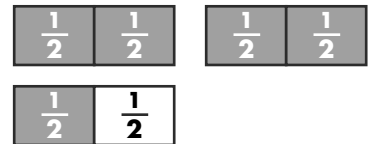
1. $\frac{2}{4} = 2 \times \frac{\square}{4}$



2. $\frac{2}{6} = \square \times \frac{1}{6}$



3. $\frac{5}{2} = \square \times \frac{1}{2}$



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

5. $\frac{10}{8} = 10 \times \frac{1}{\square}$

6. $\frac{2}{5} = 2 \times \frac{1}{\square}$

7. $\frac{1}{6}$

8. $\frac{9}{5}$

9. $\frac{8}{3}$

10. $\frac{9}{10}$

11. $\frac{9}{12}$

12. $\frac{8}{10}$

13. $\frac{6}{3}$

14. $\frac{6}{8}$

15. $\frac{4}{12}$



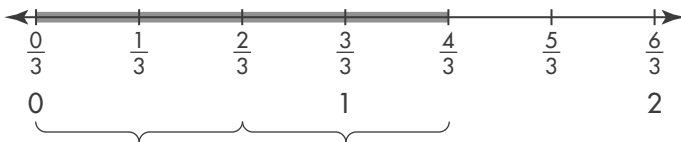
Additional Practice 10-2

Multiply a Fraction by a Whole Number: Use Models

Another Look!

Georgie walked $\frac{2}{3}$ mile to and from the gym. How many miles did Georgie walk?

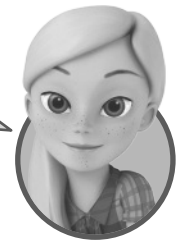
Find $2 \times \frac{2}{3}$.



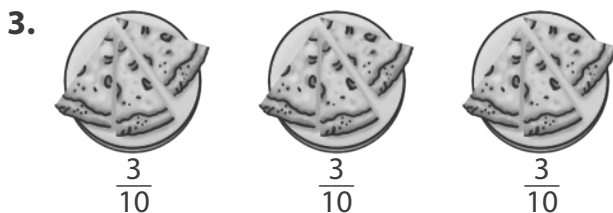
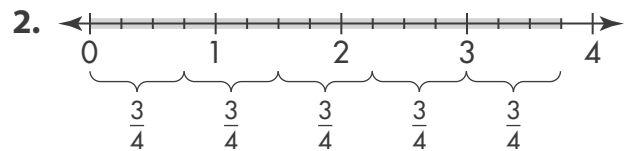
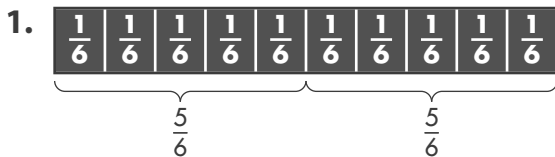
$$\begin{aligned}
 2 \times \frac{2}{3} &= \frac{2}{3} + \frac{2}{3} \\
 &= \frac{4}{3} \\
 &= \frac{3}{3} + \frac{1}{3} = 1\frac{1}{3}
 \end{aligned}$$

Georgie walked $1\frac{1}{3}$ miles.

You can use a number line and repeated addition to multiply fractions and whole numbers.



For 1–6, write and solve a multiplication equation. Use drawings or number lines as needed.



5. Calculate the distance Penny rides her bicycle if she rides $\frac{1}{4}$ mile each day for 5 days.

6. Calculate the distance Benjamin rides his scooter if he rides $\frac{3}{5}$ mile each day for 4 days.



Video



Practice



Tools



Games

Additional Practice 10-5

Model with Math

Another Look!

How many more cups of bananas than cups of flour are in 3 loaves of banana bread?

Tell how you can model with math to solve problems.

- I can use previously learned concepts and skills.
- I can find and answer any hidden questions.
- I can use bar diagrams and equations to represent and solve this problem.

Draw bar diagrams and write equations to solve the hidden question and the original question.



$$1\frac{3}{4} - 1\frac{1}{4} = \frac{2}{4}$$

Each loaf uses $\frac{2}{4}$ cup more of mashed bananas than flour.

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

3 loaves of banana bread contain $1\frac{2}{4}$ or $1\frac{1}{2}$ cups more mashed bananas than flour.

Loaf of Banana Bread

$1\frac{3}{4}$ cups of mashed bananas

$1\frac{1}{4}$ cups flour

$\frac{1}{4}$ cup applesauce

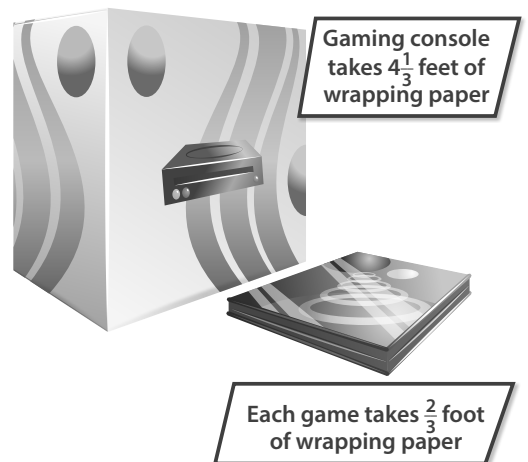
When you model with math, you can write an equation to represent the relationships in the problem.



Model with Math

Aaron wraps presents in a store. In one hour, he wraps 8 games and one console. How much wrapping paper does Aaron use? Use Exercises 1–3 to answer the question.

1. Draw a bar diagram and write an equation to find g , how much paper Aaron uses on games.



2. Draw a bar diagram and write an equation to find t , the total amount of wrapping paper Aaron used.

3. What previously learned math did you use to solve the problem?



Area, Perimeter & Volume basics

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Name _____

Connect Area to Multiplication and Addition

Dear Family,

Your child is learning about area. In addition to learning about the area of simple rectangular shapes, he or she will also learn how to find the area of irregular shapes. Your child will use both nonstandard and standard units to calculate areas with and without grid paper.

Here is an activity you can use to help your child understand area.

Changing Area

Materials grid paper and pencil

Step 1 Draw a rectangle on the grid paper, and have your child count the unit squares to find the area. Draw another rectangle with different dimensions. Have your child find the area of this rectangle.

Step 2 Draw an irregular figure, such as the outline of a house using a square and a triangle. Have your child count the unit squares to find the area. Work with your child to determine how to estimate area when only a portion of the unit square is filled. For example, 2 half-unit squares is equal to 1 whole-unit square.

Observe Your Child

Challenge your child to find two rectangles with different dimensions but with the same area. Ask your child to explain how he or she found the solution.

Name _____

Solve Perimeter Problems

Dear Family,

Your child is learning how to find perimeter. He or she is also learning that the attributes of polygons can help when finding the perimeter. For example, because the opposite sides of a rectangle are equal in length, just two measurements are needed to find the perimeter.

$$3 + 3 + 12 + 12 = 30 \text{ inches}$$
$$(2 \times 3) + (2 \times 12) = 30 \text{ inches}$$



Here is an activity for you to try together.

Design a Bedroom

Materials grid paper

- Step 1** Have your child use grid paper to design a bedroom. Have him or her draw the bedroom's shape and find its measurements.
- Step 2** Find the perimeter of the bedroom.
- Step 3** Estimate and measure actual bedroom furniture and draw the shapes within the room.
- Step 4** Find the perimeter of each piece of furniture.

Observe Your Child

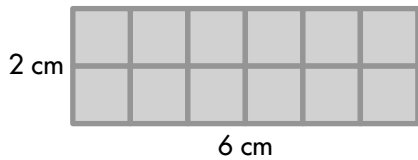
Encourage your child to measure the furniture twice to check the precision of his or her measurements.

Additional Practice 16-4

Same Perimeter, Different Area

Another Look!

Rectangles with different areas can have the same perimeter. Look at the rectangles below.

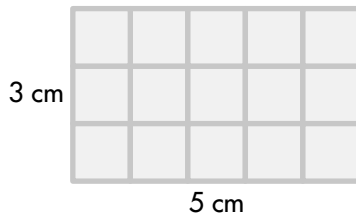


$$A = 2 \times 6$$

$$A = 12 \text{ sq cm}$$

$$P = 6 + 2 + 6 + 2$$

$$P = 16 \text{ cm}$$

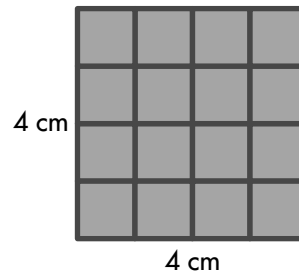


$$A = 3 \times 5$$

$$A = 15 \text{ sq cm}$$

$$P = 5 + 3 + 5 + 3$$

$$P = 16 \text{ cm}$$



$$A = 4 \times 4$$

$$A = 16 \text{ sq cm}$$

$$P = 4 + 4 + 4 + 4$$

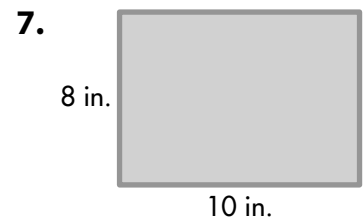
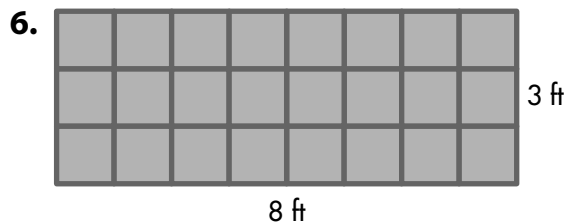
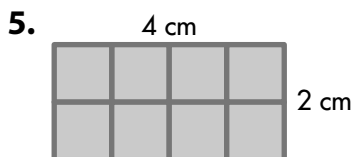
$$P = 16 \text{ cm}$$

Each of these rectangles has a different area. But they all have the same perimeter.

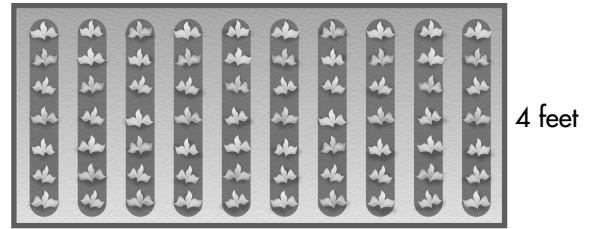
In 1–4, use grid paper to draw two different rectangles with the given perimeter. Write the dimensions and the area of each rectangle. Circle the rectangle that has the greater area.

1. 12 meters
2. 28 inches
3. 20 feet
4. 24 centimeters

Leveled Practice In 5–7, write the dimensions for a different rectangle with the same perimeter as the rectangle shown. Then tell which rectangle has the greater area.



- 8. Make Sense and Persevere** Lamar made a garden in the shape of a rectangle with an area of 36 square feet. Explain how you can find the perimeter of the garden.

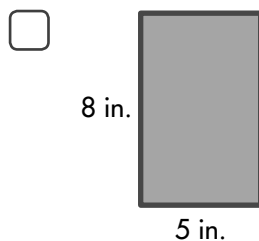
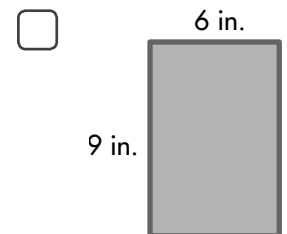
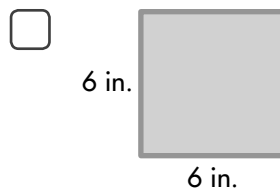
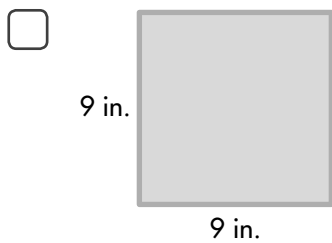


- 9.** Suppose you arrange 48 counters into rows. The first row has 3 counters. Each row after that has 2 more counters than the row before. How many rows do you need to make to use all 48 counters?

- 10. Higher Order Thinking** Jack wants to put a mat on the floor of his tree house. The mat has an area of 72 square feet. His tree house measures 8 feet by 8 feet. Does Jack have enough room in his tree house for the mat? How do you know?

Assessment Practice

- 11.** Marisol draws a rectangle with a length of 12 inches and a width of 6 inches. Select all of the rectangles that have the same perimeter as Marisol's rectangle.



- 12.** Select all the dimensions of rectangles that have an area of 36 square centimeters.

$\ell = 9 \text{ cm}, w = 4 \text{ cm}$

$\ell = 6 \text{ cm}, w = 6 \text{ cm}$

$\ell = 4 \text{ cm}, w = 6 \text{ cm}$

$\ell = 4 \text{ cm}, w = 9 \text{ cm}$

$\ell = 3 \text{ cm}, w = 10 \text{ cm}$

Name _____

Understand Volume Concepts

Dear Family,

In this topic, your child is learning about volume. He or she will learn how to find the volume of a rectangular prism, then use that understanding to formulate a plan to find the volume of a solid figure that is the combination of two or more rectangular prisms. Your child will also use models to develop the formula for volume and to recognize a cube with a side length of one unit as a unit cube having one cubic unit of volume. This will give him or her the skills necessary to solve problems involving volume, the area of the base of a prism multiplied by the height of the prism.

Here is an activity you can do with your child.

Think Inside the Box

Materials: everyday examples of rectangular prisms, such as a tissue box, cereal box, jewelry box, or shoe box

Step 1 Have your child use estimation to compare the examples of the rectangular prisms, for example, by size, shape, length, width, and height.

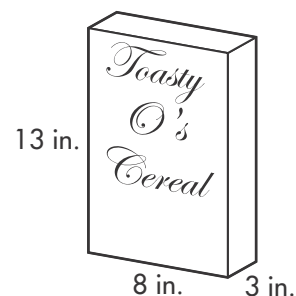
Step 2 Discuss volume as the number of unit cubes needed to fill a figure.

Step 3 Have your child use estimation to compare the volumes of the rectangular prisms. Ask questions such as: *Which box seems to have a greater volume than the tissue box? How might you order the boxes from least to greatest volume?*

Optional Work together to measure the dimensions of one of the rectangular prisms. Find its volume by using the formula for the volume of a rectangular prism.

Volume = (length \times width) \times height

For example, the volume of the cereal box pictured is 312 cubic inches because $V = (8 \times 3) \times 13 = 312$ cubic inches.



Observe Your Child

Before measuring, ask your child to decide what measurement tools would be best for measuring the containers or objects chosen and to explain his or her decision.

Additional Practice 16-5

Same Area, Different Perimeter

Another Look!

Phil has 18 square tiles with 1-foot sides. He uses the tiles to make 3 different rectangles. Each rectangle has an area of 18 square feet. What rectangles can he make? What is the perimeter of each rectangle?



You can use grid paper or color tiles to show each rectangle and help find its perimeter.

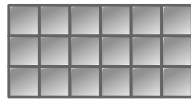
Rectangle 1



1 row of 18 tiles
 $A = 1 \times 18 = 18$ square feet

Find the perimeter:
 $P = (2 \times 18) + (2 \times 1)$
 $P = 36 + 2 = 38$ feet

Rectangle 2



3 rows of 6 tiles
 $A = 3 \times 6 = 18$ square feet

Find the perimeter:
 $P = (2 \times 6) + (2 \times 3)$
 $P = 12 + 6 = 18$ feet

Rectangle 3



2 rows of 9 tiles
 $A = 2 \times 9 = 18$ square feet

Find the perimeter:
 $P = (2 \times 9) + (2 \times 2)$
 $P = 18 + 4 = 22$ feet

Leveled Practice In 1–4, write the dimensions of a different rectangle with the same area as the rectangle shown. Then tell which rectangle has the smaller perimeter.

1. 6 cm by 4 cm

2. 5 ft by 6 ft

3. 4 m by 4 m

4. 10 ft by 10 ft

5. Wes has 20 feet of garden fencing. If he wants the smallest side of his garden to be 3 feet or longer, what possible rectangles can he make?

You can draw a picture to show this problem.



6. Mai drew the design shown below. Each rectangle in the design has the same area. Each rectangle is what fraction of the area of the complete design?



7. **Reasoning** Mari has 39 square feet of patio bricks to put around the edge of a rectangular garden. Each square brick has sides that are 1 foot long. What is the greatest perimeter that she can make with the bricks?

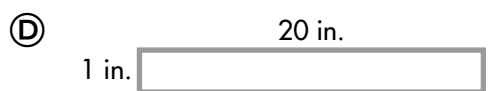
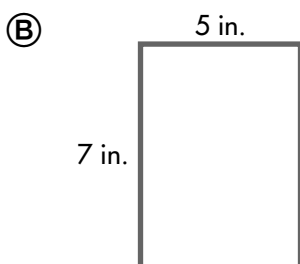
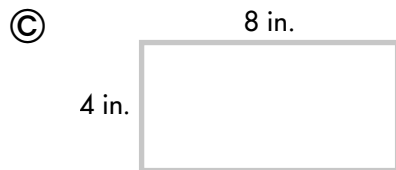
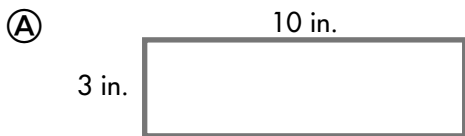
8. **Vocabulary** Jolanda started an art project at 9:00 A.M. and finished it at 9:50 A.M. The _____ for the project was 50 minutes.

9. **Higher Order Thinking** The area of a rectangle is 100 square inches. The perimeter of the rectangle is 40 inches. A second rectangle has the same area but a different perimeter. Is the second rectangle a square? Explain.

Think: Which math fact that you know has a product of 100?

Assessment Practice

10. Vimallesh draws a rectangle that is 5 inches wide by 6 inches tall. Which of the following rectangles has the same area but a different perimeter from Vimallesh's rectangle?



Additional Practice 11-1 Model Volume

Another Look!

Volume is the measure of space inside a solid figure.

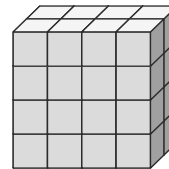
Volume is measured in cubic units.



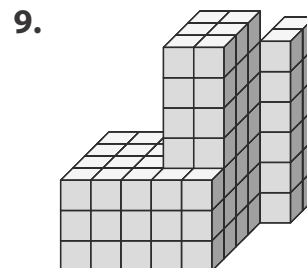
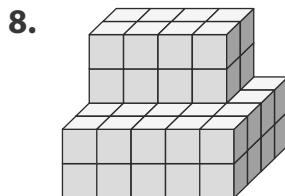
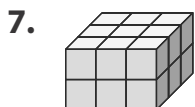
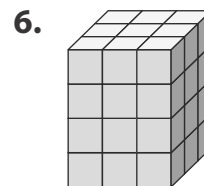
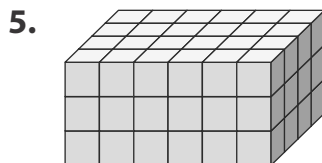
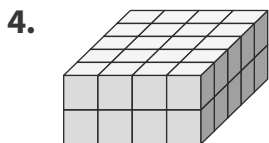
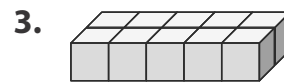
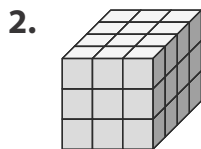
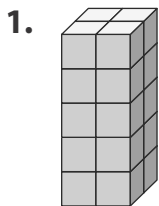
Find the volume of this solid by counting the number of unit cubes.

There are 8 cubes in the bottom layer and there are 4 layers. The total number of unit cubes is 32.

So, the volume is 32 cubic units.

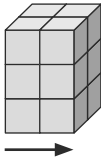
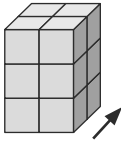
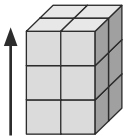


In 1–9, find the volume of each solid. Use unit cubes to help.



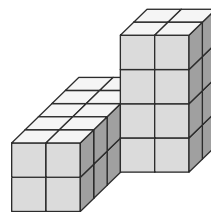
In 10–12, use the table.

- 10. Higher Order Thinking** Complete the table. Show some different ways that a rectangular prism can have a volume of 12 cubic units.
- 11. Look for Relationships** Look across each row of the table. What pattern do you see?
- 12.** Use the table to help. How many unit cubes are needed to make a model of a rectangular prism that is 4 units long, 3 units wide, and 2 units tall?

Number of Cubes Long	Number of Cubes Wide	Number of Cubes Tall
		
1	1	12
2	2	3
2	3	
2		1
3	1	
3	2	
3		1
4	1	
6		1

- 13. Number Sense** A building is 509 feet tall. Each floor is about 14 feet tall. About how many floors does the building have?


- 14.** Velma and Bruce combined their model buildings to make one building. How can they change each building part to make the parts equal in volume? Explain your reasoning.

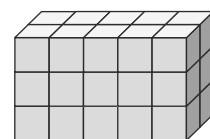


Assessment Practice

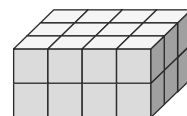
- 15.** Both of the models shown are made up of 1-inch cubes. Which statement about these models is true?

- (A) Model Q and Model R have the same volume.
- (B) Model R has a greater volume than Model Q.
- (C) The volume of Model Q is 7 cubic inches greater than the volume of Model R.
- (D) The volume of Model Q and Model R combined is 54 cubic inches.

1 unit  1 unit
1 unit



Model Q



Model R