

7<sup>th</sup> grade going to  
8<sup>th</sup> grade



\*odd only

# Grade 7 Mathematics

## Student At-Home Activity Packet

This At-Home Activity Packet includes 19 sets of practice problems that align to important math concepts your student has worked with so far this year.

We recommend that your student completes one page of practice problems each day.

Encourage your student to do the best they can with this content—the most important thing is that they continue developing their mathematical fluency and skills!

See the Grade 7 Math  
concepts covered in  
this packet!



# Understanding Addition with Negative Integers

- 1 Between the time Iko woke up and lunchtime, the temperature rose by  $11^{\circ}$ . Then by the time he went to bed, the temperature dropped by  $14^{\circ}$ .

Write an addition expression for the temperature relative to when Iko woke up.

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Draw a model using integer chips and circle the zero pairs.

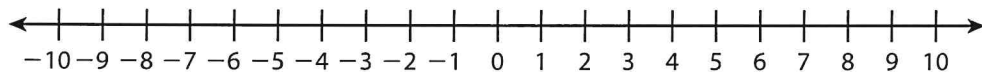
What is the value of the remaining integer chips after the zero pairs are removed?

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What is the net change in the temperature relative to when Iko woke up?

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- 2 Complete the number line model to find  $(-5) + 6$ .



$(-5) + 6 =$  \_\_\_\_\_

How would the number line model be different if you wanted to find  $(-5) + (-6)$ ?

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# Understanding Addition with Negative Integers *continued*

► For problems 3–5, consider the sum  $4 + (-8)$ .

3 Explain how you can use a number line to find the sum.

4 Explain how you can use chips to determine the sum.

5 Does it matter what order you add the numbers in the problem? Explain how chips and number lines support your answer.

6 Write an addition expression that has a value of  $-8$ .

# Understanding Subtraction with Negative Integers

- 1 Mary takes 9 grapes from Rohin and then decides to give 4 back.

Write a subtraction problem to describe how many grapes Rohin has. \_\_\_\_\_

Draw a model for the subtraction problem using integer chips.

How many negative integer chips did you cross out? \_\_\_\_\_

Write the subtraction as addition. \_\_\_\_\_

Draw a model for the addition problem using integer chips.

How do the two integer chip models show that  $-9 - (-4)$  is the same as  $-9 + 4$ ?

What is the change in the number of grapes Rohin has? \_\_\_\_\_

# Understanding Multiplication with Negative Integers

➤ Practice multiplying negative integers.

1 Find each product. Then describe any patterns you notice.

$$3 \cdot (-7) = \underline{\hspace{2cm}}$$

$$2 \cdot (-7) = \underline{\hspace{2cm}}$$

$$1 \cdot (-7) = \underline{\hspace{2cm}}$$

$$0 \cdot (-7) = \underline{\hspace{2cm}}$$

$$(-1) \cdot (-7) = \underline{\hspace{2cm}}$$

$$(-2) \cdot (-7) = \underline{\hspace{2cm}}$$

$$(-3) \cdot (-7) = \underline{\hspace{2cm}}$$

2 Solve each problem. Explain how you determined the sign of the products.

$$(-3)(9) = \underline{\hspace{2cm}}$$

$$(-8)(-5) = \underline{\hspace{2cm}}$$

$$(-5)(-6) = \underline{\hspace{2cm}}$$

$$(-1)(2)(-6) = \underline{\hspace{2cm}}$$

$$(-2)(-4)(-7) = \underline{\hspace{2cm}}$$

$$(-3)(-4)(-3)(-1) = \underline{\hspace{2cm}}$$

# Adding and Subtracting Positive and Negative Fractions and Decimals

- **Estimate each problem to check if the student's answer is reasonable. If not, cross out the answer and write the correct answer. Show your work.**

Problems	Student Answers
1 $1.3 - (-2.5)$	<del>-1.2</del> Possible estimate: $1 - (-3) = 1 + 3$ $= 4$ $1.3 - (-2.5) = 1.3 + 2.5$ $= 3.8$
2 $-3\frac{1}{6} + 6\frac{2}{3}$	$-3\frac{1}{2}$
3 $-4.2 - (-2.9)$	$-1.3$
4 $3\frac{1}{5} - 2\frac{1}{2} + 2\frac{3}{5}$	$-3\frac{1}{3}$

# Multiplying Negative Rational Numbers

► Find the product of the rational numbers. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1  $2 \times -\frac{7}{4}$

2  $-\frac{1}{3} \times -\frac{6}{5}$

3  $\frac{2}{5} \times -\frac{3}{4}$

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

5  $-\frac{3}{7} \times -1\frac{2}{3}$

6  $-3\frac{5}{7} \times -2\frac{1}{2}$

7  $0.75 \times -\frac{4}{3}$

8  $-0.2 \times -\frac{2}{5}$

9  $-0.35 \times -1\frac{3}{7}$

10  $2.5 \times -3\frac{4}{5}$

11  $0.2 \times -0.45$

12  $-0.25 \times -1.4$

13  $-2.3 \times 6.8$

14  $-3.9 \times 5\frac{5}{9}$

15  $-4.2 \times -6\frac{2}{7}$

## Answers

$-21\frac{2}{3}$

$-15.64$

$-9\frac{1}{2}$

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

$-2\frac{11}{12}$

$-1$

$-\frac{3}{10}$

$-0.09$

$\frac{2}{25}$

$0.35$

$\frac{2}{5}$

$\frac{1}{2}$

$\frac{5}{7}$

$9\frac{2}{7}$

$26\frac{2}{5}$

# Dividing Negative Rational Numbers

► Find each quotient.

1  $-5 \div \frac{5}{7}$

\_\_\_\_\_

2  $-\frac{8}{9} \div \frac{2}{3}$

\_\_\_\_\_

3  $\frac{3}{10} \div -\frac{6}{7}$

\_\_\_\_\_

4  $-2\frac{3}{4} \div 11$

\_\_\_\_\_

5  $-4\frac{2}{7} \div -\frac{15}{16}$

\_\_\_\_\_

6  $-1\frac{4}{7} \div -3\frac{2}{3}$

\_\_\_\_\_

7  $-8 \div 6.4$

\_\_\_\_\_

8  $-\frac{3}{2} \div 0.5$

\_\_\_\_\_

9  $-3\frac{1}{3} \div 1.2$

\_\_\_\_\_

10  $9.28 \div -3.2$

\_\_\_\_\_

11  $0.056 \div -0.004$

\_\_\_\_\_

12  $-0.28 \div 0.07$

\_\_\_\_\_

13 Explain the steps you used to solve problem 11.



# Writing Rational Numbers as Repeating Decimals

► Write each number as a repeating decimal.

1  $\frac{1}{9}$

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2  $-\frac{2}{11}$

---

3  $\frac{7}{11}$

---

4  $\frac{1}{3}$

---

5  $2\frac{4}{9}$

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6  $-\frac{13}{6}$

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7  $-1\frac{5}{6}$

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8  $\frac{13}{99}$

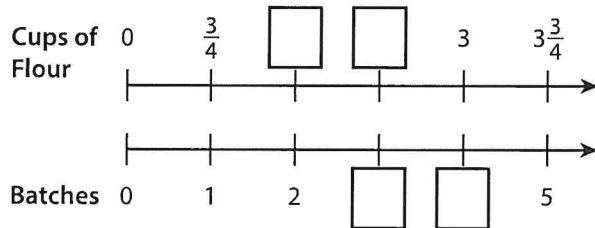
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- 9 When the denominator of a proper fraction is 99, what do you notice about the repeating digit(s) in its decimal form?

# Understanding Proportional Relationships

➤ Read and solve the problems. Show your work.

- 1 Josie is making pizza dough. Complete the double number line by filling in the missing values. Then write an equation that models the relationship between the total cups of flour,  $c$ , and number of batches,  $n$ . Show your work.



- 2 Lilli bought each of her friends a pair of colorful socks that cost \$5.50. Complete the table to show how much Lilli paid to buy different numbers of socks. Then write an equation that shows the total cost,  $c$ , for  $p$  pairs of socks.

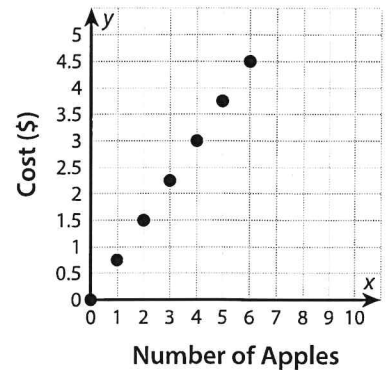
<b>Cost</b>		\$11.00			
<b>Pairs of socks</b>	1	2	3		

- 3 Explain how using a table is similar to using a double number line and how it is different.
- 4 Mrs. Lopez types at a constant rate. The constant of proportionality for the relationship between the number of words she types,  $w$ , and the number of minutes she types,  $m$ , is 38. Write an equation to show this relationship.

# Interpreting Graphs of Proportional Relationships

- The graph shows the cost of apples at a local market. Use the graph to answer problems 1–3.

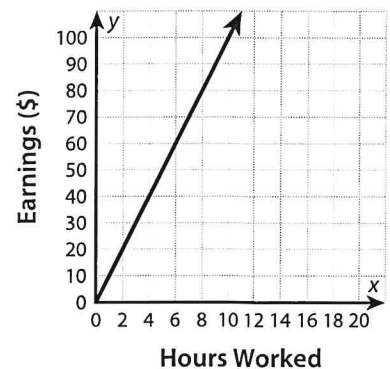
- 1 What is the cost of 1 apple and of 3 apples?  
How do you know?



- 2 What does the point  $(0, 0)$  represent in this context?
- 3 What does the point  $(2, 1.5)$  represent in this context?

- The graph shows Manuela's earnings for the number of hours she spends tutoring. Use the graph to answer problems 4 and 5.

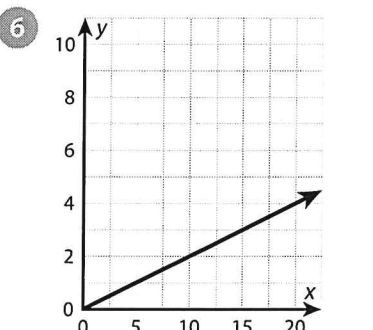
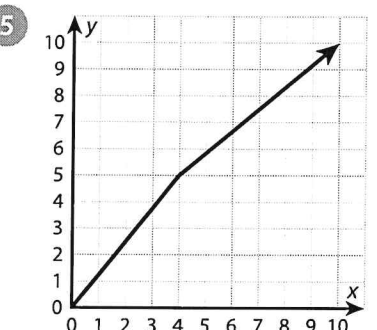
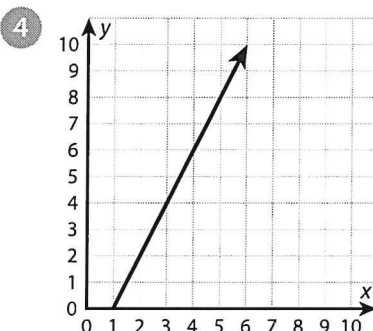
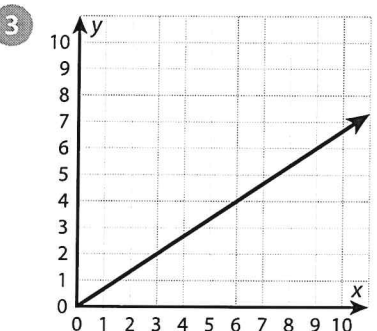
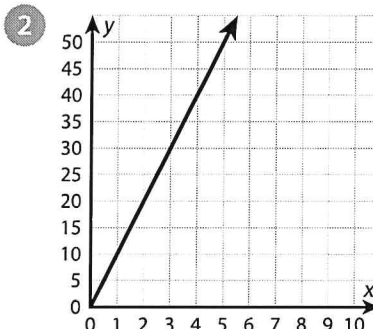
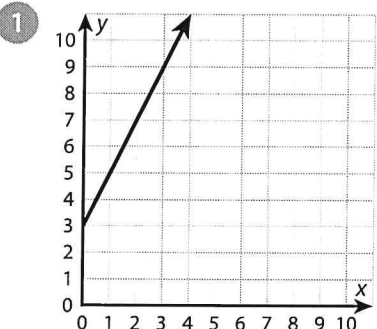
- 4 How much does Manuela earn for each hour of tutoring?  
Explain.



- 5 Write an equation that shows the relationship between Manuela's earnings,  $y$ , and hours,  $x$ .

# Recognizing Graphs of Proportional Relationships

- Circle all the problems with graphs that do NOT represent a proportional relationship. For the problems that are circled, explain why the graphs do not represent a proportional relationship.



# Solving Multi-Step Ratio Problems

➤ Solve each problem.

- 1 At The Green House of Salad, you get a \$1 coupon for every 3 salads you buy. What is the least number of salads you could buy to get \$10 in coupons?
- 

- 2 Kim orders catering from Midtown Diner for \$35. She spends \$5 on a large order of potato salad and the rest on turkey sandwiches. Each sandwich is \$2.50. How many sandwiches does Kim buy?
- 

- 3 Molly and Liza are exercising. Molly does 10 push-ups at the same time as Liza does 15 push-ups. When Molly does 40 push-ups, how many push-ups does Liza do?
- 

- 4 A shark swims at a speed of 25 miles per hour. The shark rests after 40 miles. How long, in minutes, does the shark swim before resting?
- 

- 5 Ali and Janet are selling gifts at a local craft show. For every bar of soap that Ali sells, she earns \$5. For every mug that Janet sells, she earns twice as much as Ali. Ali sells 5 bars of soap, and Janet sells 7 mugs. How much money did they make altogether?
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- 6 Ted is making trail mix for a party. He mixes  $1\frac{1}{2}$  cups of nuts,  $\frac{1}{4}$  cup of raisins, and  $\frac{1}{4}$  cup of pretzels. How many cups of pretzels does Ted need to make 15 cups of trail mix?
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- 7 The ratio of chaperones to students on a field trip is 2 : 7. There are 14 chaperones on the field trip. In all, how many chaperones and students are there?
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- 8 Dayren is driving to visit family. She drives at an average of 65 miles per hour. She drives 227.5 miles before lunch and then 97.5 miles after lunch. How many hours did she spend driving?
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# Solving Problems Involving Multiple Percents

➤ **Solve each problem.**

- 1 A chair's regular price is \$349. It is on clearance for 30% off, and a customer uses a 15% off coupon after that. What is the final cost of the chair before sales tax?
  
- 2 A calculator is listed for \$110 and is on clearance for 35% off. Sales tax is 7%. What is the cost of the calculator?
  
- 3 Cara started working for \$9 per hour. She earns a 4% raise every year. What is her hourly wage after three years?
  
- 4 A factory manufactures a metal piece in 32 minutes. New technology allowed the factory to cut that time by 8%. Then another improvement cut the time by 5%. How long does it take to manufacture the piece now? Round your answer to the nearest minute.
  
- 5 An apartment costs \$875 per month to rent. The owner raises the price by 20% and then gives a discount of 8% to renters who sign an 18-month lease. How much less do renters who sign an 18-month lease pay per month to rent the apartment?

# Solving Problems Involving Percent Change

- Find the percent change and tell whether it is a percent increase or a percent decrease.

1 Original amount: 20  
End amount: 15

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2 Original amount: 30  
End amount: 45

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3 Original amount: 625  
End amount: 550

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4 Original amount: 320  
End amount: 112

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5 Original amount: 165  
End amount: 222.75

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6 Original amount: 326  
End amount: 423.80

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7 Original amount: 27  
End amount: 38.61

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8 Original amount: 60  
End amount: 70.02

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9 How do you know when a situation involves a percent increase or a percent decrease?

# Expanding Expressions

➤ Expand each expression and combine like terms if possible.

1  $4(x - 2)$

\_\_\_\_\_

2  $-3(x + 7)$

\_\_\_\_\_

3  $-4(-x - 8)$

\_\_\_\_\_

4  $\frac{1}{3}(x - 9)$

\_\_\_\_\_

5  $-\frac{1}{4}(x + 16)$

\_\_\_\_\_

6  $-\frac{1}{5}(-x - 35)$

\_\_\_\_\_

7  $\frac{2}{3}(x + 18 - 2x)$

\_\_\_\_\_

8  $\frac{3}{4}(16x - 27 - 1)$

\_\_\_\_\_

9  $-12\left(\frac{5}{6}x - 5\right) + 2x$

\_\_\_\_\_

➤ Determine which expressions, if any, are equivalent. Show your work.

10  $4(x - 3)$

$6x - 2(x - 3)$

$x + 3(x - 2) - 6$



# Factoring Expressions

➤ Factor each expression.

1  $8a + 16$

\_\_\_\_\_

2  $12x - 20$

\_\_\_\_\_

3  $-6a + 18$

\_\_\_\_\_

4  $-14w - 21$

\_\_\_\_\_

5  $8a - 12b + 28$

\_\_\_\_\_

6  $-6x + 15y - 24$

\_\_\_\_\_

7  $2a + 3 + 7a$

\_\_\_\_\_

8  $-2x - 8x + 20$

\_\_\_\_\_

9  $5y + 10 - 25y$

\_\_\_\_\_

- 10 Simplify  $(4x + 7) - (-3x - 9) + 9x - 28$ . Then rewrite in factored form, if possible. Show your work.
- \_\_\_\_\_

# Writing and Solving Equations with Two or More Addends

- Solve each equation. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1  $8x + 15 = 63$

\_\_\_\_\_

2  $9x - 13 = 23$

\_\_\_\_\_

3  $135 = 2x + 25$

\_\_\_\_\_

4  $33 = 32x - 31$

\_\_\_\_\_

5  $12x - 16 = 68$

\_\_\_\_\_

6  $7x + 115 = 136$

\_\_\_\_\_

7  $82 = 4x + 14$

\_\_\_\_\_

8  $2x - 56 = 34$

\_\_\_\_\_

9  $3x - 4\frac{1}{2} = -19\frac{1}{2}$

\_\_\_\_\_

10  $10 = -\frac{1}{4}x + 12$

\_\_\_\_\_

11  $6x + 4.59 = 11.19$

\_\_\_\_\_

12  $25.68 = 2x - 6.32$

\_\_\_\_\_

## Answers

$x = 1.1$

$x = 45$

$x = -5$

$x = 6$

$x = 7$

$x = 16$

$x = 4$

$x = 55$

$x = 17$

$x = 8$

$x = 2$

$x = 3$

# Writing and Solving Inequalities

➤ Write and solve an inequality to answer each question.

- 1 Tetsuo has 50 arcade tokens. Each arcade game at RetroRama costs 4 tokens. How many games can Tetsuo play?

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- 2 Kimberly has \$120 to spend at the bookstore. Kimberly buys a hardcover book for \$36, as well as some gift cards for her family and friends. Each gift card is \$15. How many gift cards can Kimberly buy?

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- 3 Kwame has a budget of \$720 for his college class. He buys a laptop for \$330 and wants to use the rest to buy computer programs. Each program costs \$60. How many programs can Kwame purchase?

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- 4 A farmer ties 4 bags on his mule. If the mule can carry up to 200 lb and each bag weighs 30 lb, how many more bags can the mule carry?

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