

Notes for teachers:

- In 6th grade, students solved one-step percent problems that required them to either find the part, find the total or find a percentage given the other two pieces of information. Students did not use bar models, but 6th grade teachers built the habit of having students always start by identifying the part, total and percent:

- Ex. For a company picnic, Doug ordered a box of fresh-baked gingerbread cookies and sugar cookies. The box included a total of 25 cookies, and 20% of them were gingerbread. How many gingerbread cookies did Doug get? Show your work with a proportion.

part ?
total 25
% 20%

- They then used a proportion (at the time it was called “scaling ratios as fractions”) to solve for the missing piece. Proportions were set up in either of these two ways:

$$\frac{\text{part}}{\text{total}} = \frac{\%}{100} \quad \text{or} \quad \frac{\%}{100} = \frac{\text{part}}{\text{total}}$$

Push these habits during this this interleave unit. We will introduce and push bar models at the beginning of Unit 5 to prepare them for percent increase and decreases.

- For the integer number sense problems, push students to show *some* work. That work can vary student to student but make sure they are showing their thought process or testing out the numbers they choose with substitution.
- For equivalent expressions, there is a big emphasis on distributing a negative with distribution. It’s definitely a skill students need lots of practice on even after Unit 2. Also thrown in are some decimals to the tenths place. Students should do any decimal operations in the margins.
- At the beginning of this unit, the inequality questions just require students to write the inequality. If this is too easy for your students, you can push them to write and solve each question sooner in the unit.



No calculators

**7th Grade
Math Review
Unit 4**

Name: _____

Unit Topics:

1. Percent word problems
2. Integer number sense with variables
3. Finding equivalent expressions with multiple terms, fractions and decimals
4. Writing and solving inequalities

Notes:

Round 1

1. What could be the value of x in the expression below if y is a positive number? **Select all that apply.** Show work.

$$-3x = y$$

- (A) 3
- (B) 0
- (C) -10
- (D) -250
- (E) $\frac{1}{3}$
- (F) 0.1

2. Simplify the following expressions.

a. $-1 - 5m + 7m - 9$

b. $-(-4.5n - 13.2)$

- 3. Write an inequality that can be used to solve the following scenario.
You do not need to solve it.**

Pet Supplies Plus makes a profit of \$5.50 per bag on its line of natural dog food. If the store wants to make a profit of at least \$500, how many bags, b , of dog food does it need to sell?

- 4. For a company picnic, Doug ordered a box of fresh-baked gingerbread cookies and sugar cookies. The box included a total of 25 cookies, and 20% of them were gingerbread. How many gingerbread cookies did Doug get? Show your work with a proportion.**

Round 1: Second At Bat

5. Simplify the following expressions.

a. $2 - 9x + 3 - 8x - 13$ b. $-2 \cdot (m - 2.9)$

6. What could be the value of x in the expression below if y is a negative number? **Select all that apply.**

$$-10x = y$$

- (A) 0
- (B) 0.5
- (C) -0.5
- (D) 2
- (E) -2
- (F) 10

7. Last Wednesday, students could choose ham or turkey sandwiches for lunch. The cafeteria made 200 sandwiches and 90% of them were turkey sandwiches. How many ham sandwiches did the cafeteria make? Show your work with a proportion.

8. **Write an inequality that can be used to solve the following scenario.**
You do not need to solve it.

Allison practices her violin for more than 12 hours per week. She practices for 2 hours each time she sits down to practice. If Allison has already practiced for 3 hours this week, how many more times, t , does she need to practice for her to meet or exceed her weekly goal?

Round 1: CURVEBALL!

9. Henry has a die with 6 faces and a spinner with three equal-sized colored sections. The possible outcomes for each are shown below:

- Cube outcomes: 1, 2, 3, 4, 5 and 6
- Spinner outcomes: red, orange and yellow

What is the probability that the number pyramid will land on an even number and the spinner will stop on yellow? Show your work.

Round 2

- 1. Write an inequality that can be used to solve the following scenario.
You do not need to solve it.**

Ryan is a wrestler trying to make weight. He currently weighs 200 pounds. If he cuts 2 pounds per week, how many weeks, w , will it take him to weigh less than 175 lbs?

- 2. What could be the value of x in the expression below if y is a negative number? **Write 3 possible values.** Show work.**

$$-17 \div x = y$$

3. Simplify: $-6r + 2(16r - 7)$

4. 6 out of 25 students were absent on Monday in a first grade class. What percentage of the class was absent? Show your work with a proportion.

Round 2: Second At Bat

- 5. Write an inequality that can be used to solve the following scenario.
You do not need to solve it.**

A taxi charges a flat rate of \$1.75 plus an additional \$0.65 per mile. If Erica has at most \$10 to spend on her cab ride, how far can she travel? Use m to represent the number of miles she travels in the cab.

- 6. Ivan bought chocolate and vanilla cupcakes to school for his birthday. 33 students picked a vanilla cupcake and 17 students picked a chocolate cupcake. What percentage of the students picked a vanilla cupcake? Show your work with a proportion.**

7. What could be the value of a in the expression below if b is a positive number? **Write 3 possible values.** Prove your values work by finding those sums.

$$- 24 + a = b$$

8. Simplify.

a. $-(4x - 5) + 2.1x + 1.1$ **b.** $- 0.7(3 - 2.9r)$

Round 2: CURVEBALL!

9. Which expression is equivalent to $(-18) - 64n$? Show work.

(A) $-2(9 - 32n)$

(B) $2(9 - 32n)$

(C) $-2(9 + 32n)$

(D) $2(9 + 32n)$

Round 3

1. Simplify.

a. $5 - 5(2x - 13)$

b. $-4 + 2(x - 3)$

2. **Write and solve** an inequality that can be used to solve the following scenario.

Keith has \$500 in a savings account at the beginning of the summer. He withdraws \$20 each week for food and personal expenses. How many weeks w can Keith withdraw money from his account to still have at least \$200 in his account?

- 3.** In order to select new board members, the Student Government club held an election. 24 students voted for Joel as the new school president. If 40% of students voted for Joel, how many total students voted in the election?

- 4.** Use the following cards to answer the questions that follow.

c	$-\frac{1}{c}$	$-c$	$\frac{1}{c}$
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- a.** Choose two cards that would result in a sum of 0. Prove your cards work with substitution.
- b.** Choose two *different* cards that would also result in a sum of 0. Prove your cards work with substitution.

Round 3: Second At Bat

5. Solve:

The seniors at Brooke High School are hoping to raise more than \$3,000 for cancer research. They ask every student in the school to raise \$40. How many students will they need to raise money to reach or exceed their goal?

6. Use the following cards to answer the questions that follow.

c	$-\frac{1}{c}$	$-c$	$\frac{1}{c}$
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- a.** Choose two cards that will have a product of 1. Prove your cards work with substitution.
- b.** Choose two cards that will have a product of -1 . Prove your cards work with substitution.

7. Simplify.

a. $-1.3 - 7.1x + 2.9 - 4x$ **b.** $4.5 - 5(2a + 1)$

8. A scientist evaluated the local deer population. The scientist found that there were 9 juveniles and 27 adults in the local population. What percentage of the deer were juveniles?

Round 3: CURVEBALL!

9. Which of the following could be the rule used to create the number pattern shown below?

250, 130, 70, 40, 25

- (A) Subtract 120
- (B) Subtract 10; then divide the result by 2
- (C) Divide by 2
- (D) Divide by 2; then add 5 to the result

Round 4

1. The 7th grade class at Brooke East Boston is putting on a talent show to raise money. It costs \$700 to rent the theater they are going to use. If they charge \$40 for each ticket, how many tickets do they need to sell in order to raise more than \$100?

2. x is a negative number. y is a positive number.

a. What would be the sign of the sum $y + y + y$?
Show work.

b. What would be the sign of the sum $x + x + x$?
Show work.

c. What would be the sign of the product $-10y$?
Show work.

d. What would be the sign of the product $-10x$?
Show work.

3. Last Tuesday was Jersey Day at Leroy's school. 180 students participated and wore a sports jersey to school. If 80% of the students were wearing a jersey of a Boston sports team, how many students were **not** wearing a jersey of a Boston sports team?

4. Simplify.

a. $(-4g + 8.1) + (g - 3.2)$ b. $(7y + 7) - (4y - 5.5)$

Round 4: Second At Bat

5. The students in Gabe's grade voted to select a famous guest speaker.

- 3 students voted for a famous athlete.
- 125 students voted for a famous actor.
- 22 students voted for a famous musician.

What percentage of the students voted for a famous athlete?

6. Daniel has at most \$35 to spend at the fair. If the admission to the fair is \$8 and each ride costs \$2 to go on, how many rides can Daniel go on?

7. Simplify.

a. $-(x + 8.1) + (2x + 5.2)$ **b.** $-(7.3y + 2) - (4y + 5)$

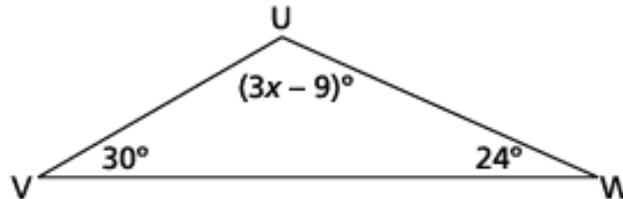
8. Which of the following statements could be true?

$$7ab = 90$$

- (A) a is 0 and b is positive.
- (B) a is positive and b is negative.
- (C) Either a or b are negative.
- (D) Both a and b are negative.

Round 4: CURVEBALL!

9. The measures of the angles in triangle UVW are shown in the diagram below.



What is the value of x ?

- (A) 21
- (B) 39
- (C) 45
- (D) 126