Grade 6 Mathematics

Student At-Home Activity Packet

This At-Home Activity Packet includes 21 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 6 Math concepts covered in this packet!



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Grade 6 Math concepts covered in this packet

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Understanding Ratio Concepts

➤ **Complete each problem about ratio relationships.**

1. Ms. Omar runs the school tennis club. She has a bin of tennis balls and rackets. For every 5 tennis balls in the bin, there are 3 tennis rackets. Draw a model to show the ratio of tennis balls to tennis rackets.

   Write the following ratios.

   tennis balls to tennis rackets _____

   tennis balls to total pieces of tennis equipment _____

2. Christian has a collection of 18 shark teeth. He identified them as 6 tiger shark teeth, 8 sand shark teeth, and the rest as bull shark teeth.

   What does the ratio 6 : 8 represent in this situation?

   What does the ratio 4 : 18 represent in this situation? Explain your reasoning. Include a model in your explanation.

3. How are part-to-part ratios different from part-to-whole ratios?

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Using Equivalent Ratios

➤ **Solve each problem.**

1. Josie is training for a race. The ratio of the number of minutes she runs to the number of miles she runs is 24 to 3. She plans to run 10 miles. How many minutes will it take her?

2. A chef planning for a large banquet thinks that 2 out of every 5 dinner guests will order his soup appetizer. He expects 800 guests at the banquet. Use equivalent ratios to estimate how many cups of soup he should prepare.

3. Fred is making a fruit salad. The ratio of cups of peaches to cups of cherries is 2 to 3. How many cups of peaches will Fred need to make 60 cups of fruit salad?

4. A community garden center hosts a plant giveaway every spring to help community members start their gardens. Last year, the giveaway supported 50 families by giving away 150 plants. Based on this ratio, how many plants will the center give away this year in order to support 65 families?

5. The first week of January, there are 49 dogs and 28 cats in an animal shelter. Throughout the month, the ratio of dogs to cats remains the same. The last week of January, there are 20 cats in the shelter. How many dogs are there?

6. A wedding planner uses 72 ivy stems for 18 centerpieces. When she arrives at the venue, she realizes she will only need 16 centerpieces. How many ivy stems should she use so that the ratio of ivy stems to centerpieces stays the same?

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Understanding Rate Concepts

1 It takes Maya 30 minutes to solve 5 logic puzzles, and it takes Amy 28 minutes to solve 4 logic puzzles. Use models to show the rate at which each student solves the puzzles, in minutes per puzzle.

If Maya and Amy had the same number of puzzles to solve, who would finish first? Explain.

2 A garden hose supplies 36 gallons of water in 3 minutes. Use a table of equivalent ratios to show the garden hose's water flow in *gallons per minute* and *minutes per gallon*.

How many gallons of water does the hose supply in 10 minutes? Explain.

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Understanding Rate Concepts *continued*

3 Max travels to see his brother's family by car. He drives 216 miles in 4 hours. What is his rate in miles per hour? Use a double number line to show your work.

Suppose he makes two stops of 10 minutes each during his journey. Will he be able to reach the town in 4 hours if he keeps the speed the same?

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Using Unit Rates to Find Equivalent Ratios

➤ **Solve each problem. Show your work.**

1. Rachel mows 5 lawns in 8 hours. At this rate, how many lawns can she mow in 40 hours?

2. A contractor charges $1,200 for 100 square feet of roofing installed. At this rate, how much does it cost to have 1,100 square feet installed?

3. It takes Jill 2 hours to run 14.5 miles. At this rate, how far could she run in 3 hours?

4. Bobby catches 8 passes in 3 football games. At this rate, how many passes does he catch in 15 games?

5. Five boxes of crackers cost $9. At this rate, how much do 20 boxes cost?

6. It takes a jet 2 hours to fly 1,100 miles. At this rate, how far does it fly in 8 hours?

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Using Unit Rates to Find Equivalent Ratios *continued*

7 It takes Dan 32 minutes to complete 2 pages of math homework. At this rate, how many pages does he complete in 200 minutes?

8 Kendra gets a paycheck of $300 after 5 days of work. At this rate, how much does she get paid for working 24 days?

9 Tim installs 45 square feet of his floor in 50 minutes. At this rate, how long does it take him to install 495 square feet?

10 Taylin buys 5 ounces of tea leaves for $2.35. At this rate, how much money does she need to buy 12 ounces of tea leaves?

11 In problem 10, how would your work be different if you were asked how many ounces of tea leaves Taylin could buy with $10?

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Using Unit Rates to Compare Ratios

➤ **Solve each problem. Show your work.**

1. Shawn sells 36 vehicles in 4 weeks. Brett sells 56 vehicles in 7 weeks. Who sells more vehicles per week?

2. The table shows the gas mileage of two vehicles. Which vehicle travels more miles per gallon?

Car	Miles	Gallons
Pickup Truck	120	8
Minivan	180	10

3. Joe and Chris each have a lawn mowing business. Joe charges $40 to mow 2 acres. Chris charges $30 to mow 1.2 acres. Who charges more per acre?

4. The table shows the time it took two athletes to run different races. Who ran faster?

Athlete	Seconds	Meters
Ellen	28	200
Lindsay	60	400

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Using Unit Rates to Compare Ratios *continued*

5 Branden and Pete each play running back. Branden carries the ball 75 times for 550 yards, and Pete has 42 carries for 380 yards. Who runs farther per carry?

6 The table shows the price of two cereal brands and the number of ounces per box. Which is the better price per ounce?

Cereal	Ounces	Price
Brand A	18	$2.50
Brand B	24	$3.50

7 Describe two different ways you could change the values in the table so that the answer to problem 6 is different.

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Using Unit Rates to Convert Measurements

➤ **Solve each problem. Show your work.**

1. Susan has a 12-inch board for constructing a wooden chair. The directions say to use a board that is 29 centimeters long. Is her board long enough to cut? (1 inch = 2.54 centimeters)

2. Kevin uses 84 fluid ounces of water to make an all-purpose cleaner. The directions call for 4 fluid ounces of concentrated soap for every 3 cups of water. How many fluid ounces of soap should he use? (1 cup = 8 fl oz)

3. Shannon test-drives a car in Germany and drives 95 kilometers per hour. What is her speed in miles per hour? (1 kilometer ≈ 0.62 mile)

4. Keith works 8 hours per day for 5 days per week. Melba works 2,250 minutes each week. Who spends more time at work?

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Using Unit Rates to Convert Measurements *continued*

5 Jason runs 440 yards in 75 seconds. At this rate, how many minutes does it take him to run a mile? (1 mile = 1,760 yards)

6 Boxes of granola are on sale at a price of 2 for $4.50. There are 12 ounces of granola in each box. What is the unit price in dollars per pound?

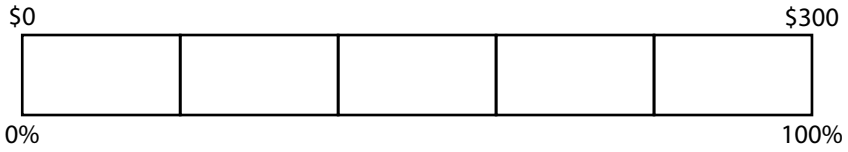
7 Sam is delivering two refrigerators that each weigh 105 kilograms. There is an elevator with a weight limit of 1,000 pounds. Can he take both refrigerators on the elevator in one trip? (1 kilogram ≈ 2.2 pounds)

8 For every 140 feet that Kelly rides on her bicycle, the wheels turn 20 times. About how many times do the wheels turn in 5 miles? (1 mile = 5,280 feet)

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Understanding Percents

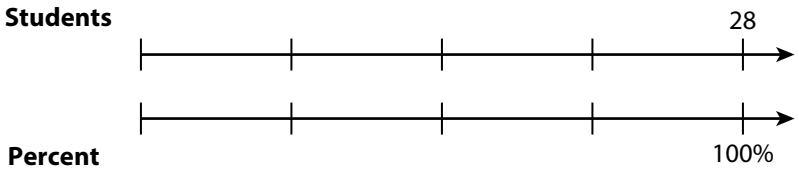
1. Emma is saving for a bicycle that costs $300. This month, she reaches 60% of her goal. Label and shade the bar model to show her progress. How much money has she saved? Explain.



2. Justin needs to make 80 illustrations for an art book. He has made 40% of the illustrations. Make a bar model to show his progress. How many illustrations does he still need to make? Explain.

3. In a classroom of 28 students, 75% of the students have met their reading goal.

   Label the double number line. How many students met their reading goal? What fraction of 28 students met their reading goal? Explain.



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Finding a Percent of a Quantity

➤ **Find the percent of the number. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. 40% of 80 _____
2. 25% of 60 _____
3. 10% of 90 _____
4. 50% of 70 _____
5. 80% of 500 _____
6. 75% of 80 _____
7. 90% of 250 _____
8. 65% of 400 _____
9. 85% of 800 _____
10. 55% of 140 _____
11. 45% of 160 _____
12. 95% of 180 _____
13. 70% of 720 _____
14. 15% of 220 _____
15. 65% of 200 _____

Answers

9	77	504	72	225
260	171	33	60	35
400	32	130	680	15

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Finding the Whole

➤ **Solve each problem.**

1. 25% of what number is 13?

_____

2. 50% of what number is 140?

_____

3. 10% of what number is 60?

_____

4. 5% of what number is 12?

_____

5. 30% of what number is 72?

_____

6. 70% of what number is 56?

_____

7. 95% of what number is 57?

_____

8. 75% of what number is 66?

_____

9. 85% of what number is 102?

_____

10. 45% of what number is 63?

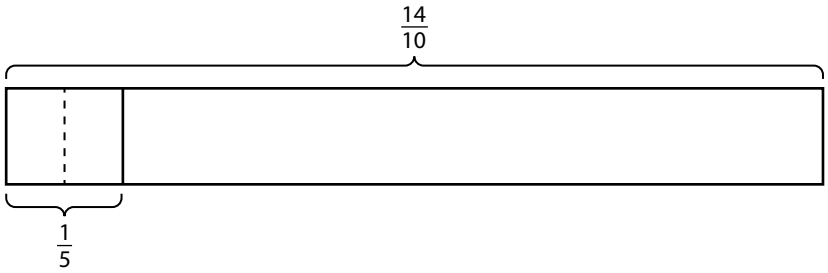
_____

11. Explain how you could use 25% of a number to find the number.

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Understanding Division with Fractions

1 Complete the bar model to show how many $\frac{1}{5}$s make $\frac{14}{10}$.

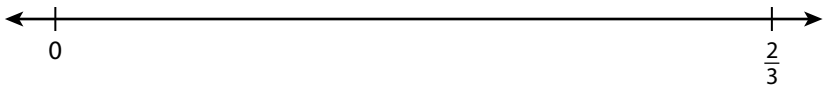


How many $\frac{1}{5}$s make $\frac{14}{10}$? _____

Complete the equations.

$\frac{14}{10} \div$ _____ $= 7$ _____ $\cdot \frac{1}{5} = \frac{14}{10}$

2 Use the number line to show $\frac{2}{3} \div \frac{1}{12}$.



What is the quotient? _____

3 Which type of model do you like better, the bar model or the number line? Explain.

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Using Multiplication to Divide by a Fraction

➤ **Write the missing digits in the boxes to make each equation true.**

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

2. $\frac{4}{5} \div \frac{1}{4} = \frac{4}{5} \times \frac{4}{\square} = \frac{\square}{\square}$

3. $\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{\square}{\square} = \frac{\square}{15}$

4. $\frac{5}{6} \div \frac{5}{12} = \frac{5}{6} \times \frac{\square}{\square} = \frac{\square}{30} = 2$

5. $\frac{3}{4} \div \frac{5}{7} = \frac{3}{4} \times \frac{\square}{\square} = \frac{\square}{\square}$

6. $1\frac{1}{3} \div \frac{3}{7} = \frac{\square}{3} \times \frac{7}{\square} = \frac{\square}{\square}$

7. $4\frac{\square}{2} \div \frac{2}{5} = \frac{9}{2} \times \frac{\square}{\square} = \frac{\square}{\square}$

8. $3\frac{1}{2} \div \frac{\square}{8} = \frac{7}{\square} \times \frac{8}{7} = \frac{\square}{\square} = \square$

9. $1\frac{2}{3} \div 2\frac{1}{4} = \frac{\square}{3} \times \frac{\square}{9} = \frac{\square}{\square}$

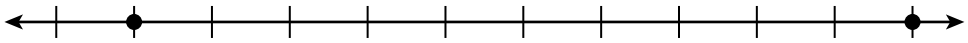
10. $3\frac{3}{5} \div 1\frac{3}{\square} = \frac{18}{\square} \times \frac{4}{7} = \frac{\square}{\square}$

11. Write a word problem that could be solved by the equation in problem 8.

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Understanding Positive and Negative Numbers

1. The points on the number line are opposite numbers. The tick marks represent intervals of 1 unit.



Label 0 at the correct spot on the number line.

Label the point plotted to the right of 0.

Label the point plotted to the left of 0.

2. Use this list of numbers to answer the following questions:

$0, 4, -2, \frac{2}{3}, -1.8, 16, 3.2, -\frac{5}{4}$

Which numbers are rational numbers that are not integers?

Of the remaining numbers, which are integers but not whole numbers?

Of the remaining numbers, which are whole numbers?

3. Use the following terms to complete the following statements: *integers*, *rational numbers,* and *whole numbers*. Use each term only once.

The counting numbers and zero are _____.

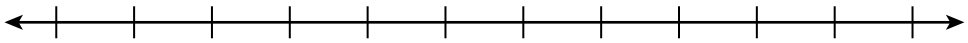
The counting numbers and their opposites, along with zero, are _____.

Integers and the decimal equivalents of fractions are _____.

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Understanding Positive and Negative Numbers *continued*

4 Plot and label 4, −3, 1, and their opposites on the number line.



5 If several points are graphed on a number line, is the point that is the farthest from 0 always the greatest? Explain.

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Comparing Positive and Negative Numbers

➤ **Write < or > to make each comparison true.**

1. $7 \bigcirc 10$
2. $7 \bigcirc -10$
3. $-7 \bigcirc -10$
4. $\frac{2}{3} \bigcirc -1\frac{2}{3}$
5. $-50 \bigcirc 0.3$
6. $-12 \bigcirc -35$
7. $-5 \bigcirc 4.5$
8. $\frac{1}{2} \bigcirc -80$
9. $-\frac{1}{4} \bigcirc -1.4$

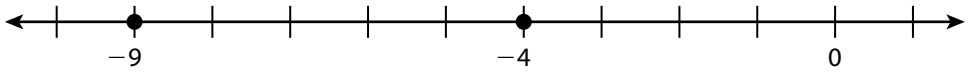
➤ **Write each set of numbers in order from least to greatest.**

10. $5, -2, -1, 4$ _____
11. $3.4, 7, -3.5, -3$ _____
12. $-2.1, -2, -3, 0$ _____
13. $-\frac{3}{4}, -2, -\frac{1}{4}, 2$ _____
14. $5, 0, -6, -0.1$ _____
15. $7.5, -200, -1.5, -8$ _____
16. $\frac{1}{2}, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}$ _____
17. $1.2, -2.1, -21, 0.12$ _____
18. $0.1, -0.2, 0.55, -0.31$ _____
19. Describe how to determine which of two negative numbers is greater. Give an example.

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Understanding Absolute Value

1 Answer the questions about this number line.



Which is greater, -9 or -4? Explain.

Which is greater, $|-9|$ or $|-4|$? Explain.

2 A football team tries to move the ball forward as many yards as possible on each play, but sometimes they end up behind where they started. The distances, in yards, that a team moves on its first five plays are 2, -1, 4, 3, and -5. A positive number indicates moving the ball forward, and a negative number indicates moving the ball backward.

Which number in the list is the greatest?

What is a better question to ask to find out which play went the farthest from where the team started?

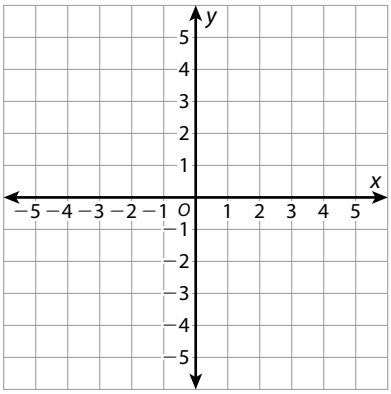
The coach considers any play that moves the team more than 4 yards from where they started a "big play." Which play(s) are big plays?

3 When does it make sense to compare the absolute values of numbers rather than the numbers themselves?

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Understanding the Four-Quadrant Coordinate Plane

➤ **For problems 1–6, plot and label each point in the coordinate plane. Name the quadrant or axis where the point is located.**



1. $A(-3, -2)$

2. $B(4, -4)$

3. $C(2, 3)$

4. $D(-2, 4)$

5. $E(3, -3)$

6. $F(4, 0)$

7. If point E above is reflected across the x-axis, what would be the coordinates of the reflection? Explain.

8. Imagine that one of the points given in problems 1–6 has been reflected. The reflection is in Quadrant II. What are the possible coordinates of the reflected point? Explain.

9. Bradley says that if point B is reflected across the y-axis and its reflection is then reflected across the x-axis, the result is point D. Is Bradley correct? Explain.

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Writing and Interpreting Algebraic Expressions

➤ **Write an algebraic expression for each word phrase or situation.**

1. 12 more than 8.2 times a number n

2. 3 less than the quotient of 18 and a number m

3. 5.6 times the sum of 4 and a number p

4. the quotient of 2 and a number x, times 3

5. Five friends split the cost of parking at an amusement park. Each of them also buys a $30 ticket. Write an algebraic expression that represents the amount of money each friend spends. Identify any variables.

6. A movie theater is open x hours Monday through Thursday and y hours Friday through Sunday. Write an algebraic expression that represents the number of hours per week the theater is open.

➤ **Interpret the meaning of the algebraic expression in each problem.**

7. Andrew writes the algebraic expression $2s + 2.79$ to represent the cost of his lunch. He bought 2 sandwiches and a large drink. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

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Writing and Interpreting Algebraic Expressions *continued*

8 A teacher writes the algebraic expression $24c + 5m + 19.99$ to represent the cost of supplies she purchased for her classroom. She bought 24 packages of colored pencils, 5 packages of markers, and a beanbag chair. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

9 Write a situation that could be represented by the algebraic expression $3s + 2.15$.

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Evaluating Algebraic Expressions

➤ **Check each answer to see whether the student evaluated the expression correctly. If the answer is incorrect, cross out the answer and write the correct answer.**

Algebraic Expressions	Student Answers	
1 $5m + 26$ when $m = 3$	$5(3) + 26 = 15 + 26$ $= 31$	Possible answer: $5(3) + 26 = 15 + 26$ $= 41$
2 $8(x + 2)$ when $x = 6$	$8(6 + 2) = 48 + 2$ $= 50$	
3 $7p + 5$ when $p = 12$	$7(12) + 5 = 7(17)$ $= 119$	
4 $q + 9p$ when $q = 18$ and $p = 4$	$18 + 9(4) = 18 + 36$ $= 54$	
5 $6w - 19 + k$ when $w = 8$ and $k = 2$	$6(2) - 19 + 8 = 12 - 19 + 8$ $= 1$	
6 $12x + y$ when $x = 3$ and $y = 52$	$12(3) + 52 = 36 + 52$ $= 88$	

7 Check your answer to problem 2 by using a different strategy.

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Using Order of Operations with Expressions with Exponents

➤ **Simplify or evaluate each exponential expression using the order of operations. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. $(6 + 3)^4$ _____

2. $6 + 3^4$ _____

3. $2(4^3) - 1$ _____

4. $2(4^3 - 1)$ _____

5. $5 + 9(1 + 2)^2$ _____

6. $5 + 9(1) + 2^2$ _____

7. $(18 - 4)^2$ _____

8. $18 - 4^2$ _____

9. $9 + 2(3^2)$ _____

10. $(9 + 2)3^2$ _____

11. $12 + x^4 - 6$ when $x = 8$ _____

12. $m^3 + 9n$ when $m = 4$ and $n = 5$ _____

Answers

27	196	2	18	126	99
127	86	109	4,102	87	6,561

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Identifying Equivalent Expressions

➤ **Determine whether each pair of expressions is equivalent. Show your work.**

1. $2(x - y)$ and $2x - 2y$

2. $4(x + y)$ and $4y + 4x$

3. $4p + 3c$ and $(c + 2p)(2)$

4. $21q - 7p$ and $(3q - p)(7)$

5. $4(2a - 3v)$ and $8a + 6v$

6. $8(3x + c) - 1$ and $8c + 24x - 1$

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Identifying Equivalent Expressions *continued*

7 $3(2x + 11)$ and $(3x + 15)(2)$

8 $2x + 2x + 2c + 6$ and $(2x + c + 3)(2)$

9 $3e + 7 - e$ and $2e + 10 + 2e - 3$

10 $5c + 4c + 2$ and $5c + 2(2c + 1)$

11 How can you check your answer to problem 8 by choosing values for the variables?

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Writing and Solving One-Variable Equations

➤ **Solve each problem by writing and solving a one-variable equation.**

1. In the first three innings of a baseball game, the home team scored some runs. In the rest of the game, they scored 5 runs more than the number of runs scored in the first three innings. If the home team scored 9 runs in all, how many runs did they score during the first three innings? How many runs did they score in the remainder of the game? Let $x =$ the runs scored in the first three innings.

2. The punch bowl at Felicia's party is getting low, so she adds 12 cups of punch to the bowl. Two guests serve themselves 1.25 cups and 2 cups of punch. The punch bowl now contains 11.5 cups of punch. How many cups were in the punch bowl before Felicia refilled it? Let $n =$ number of cups in bowl before Felicia refilled it.

3. Vanessa is a caterer. She made several batches of appetizers last weekend for an event. This weekend, Vanessa made 4 times as many batches. She made a total of 25 batches of appetizers for the two weekends. Determine the number of batches Vanessa made last weekend and the number of batches she made this weekend. Let $b =$ the number of batches of appetizers Vanessa made last weekend.

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Writing and Solving One-Variable Equations *continued*

4 Wanda earned $350 babysitting over the months of July and August. She earned $90 more in August than in July. How much did she earn babysitting in July? In August?

5 Charlene is 8 years older than Aaron. The sum of their ages is 44. What are their ages?

6 On Saturday, 45% of the music Brianna listened to was country songs. She listened to 27 country songs on Saturday. How many songs did Brianna listen to on Saturday?

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Writing and Graphing One-Variable Inequalities

➤ **Write an inequality to represent each situation.**

1. A farmer weighs a dozen chicken eggs. The heaviest egg is 56 g.

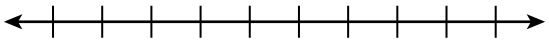
2. A light bulb is programmed to turn on when the temperature in a terrarium is 72°F or cooler.

3. Martin is building a sandcastle at the beach. He pours no less than 5 cups of wet sand into each plastic mold.

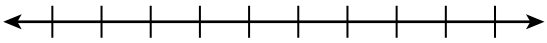
4. The shortest tree in a park is at least 25.5 ft tall.

➤ **Graph each inequality.**

5. $n \geq -2$



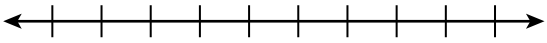
6. $h \leq 5$



7. $t \leq 7.1$



8. $r \geq -\frac{2}{3}$



9. What is the difference between the inequality $x \leq 5$ and the equation $x = 5$?

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