

Grade 8 Curriculum 2019-2020

Concepts covered for the 8th grade.

Chapter 1: Real Numbers.

- Rational and irrational numbers
- Squares and square roots
- Cubes and cube roots
- Pythagorean Theorem
- Coordinate Plane and Distance

Chapter 2: Solving Linear Equations.

- Two step and multi step equations
- Types of solutions of linear equations

Chapter 3: Introduction to Functions.

- Linear and Nonlinear Functions
- Graphs and functional relationships

Chapter 4: Graphing Functions.

- Slope of linear equations
- Linear functions

Chapter 5: Systems of linear equations.

- Solve by graphing
- Solve by substitution and elimination

Chapter 6: Exponents.

- Scientific notation
- Multiply and Divide with exponents
- Multiply and Divide with scientific notation

Chapter 7: Introduction to Geometry.

- Pairs of angles
- Parallel lines and angles
- Congruent figures
- Similar figures
- Angles and polygons

Chapter 8: Transformations.

- Translations
- Reflections and symmetry
- Rotations
- Congruence
- Dilations
- Similarity

Chapter 9: Geometry and Measurement.

- Solids
- Volume, prisms, cylinders
- Volume, pyramids, cones
- Spheres
- Exploring similar solids

Chapter 10: Data analysis

- Analyzing scatter plots
- Modeling data with lines
- Two-way tables

The Common Core State Standards for Grade 8 are algebra-focused. Students work with linear equations, functions and applications involving functions, and geometric concepts that include the Pythagorean Theorem and transformations.

Certain topics that have often been part of the Grade 8 curriculum are not included in the CCSS. In general, these topics are not included because students are expected to have achieved fluency with them in earlier grades. These topics include rational numbers and operations with rational numbers; operations with integers; solving equations; ratios, rates, and proportional relationships; properties and attributes of two-and-three dimensional space. If a student needs more practice mastering the above skills, he/she should use the Khan Academy Program. They can access these in their Khan Class with the link below. After going to the link enter the Class Code. Please login using your school Google Account. If you don't have one yet or don't know it, I can be reached at msylvester@sfxacushnet.com to help you in the process.

www.khanacademy.org/join

Algebra 1 Class Code: 7BU2XMV3

Math 8 Class Code: MT7N2P9P

Mr. Sylvester

The students should be strong in the following skills:

- Operations with decimals (+, -, \times , \div)
- Operations with fractions (+, -, \times , \div)
- operations with integers (+, -, \times , \div)
- Solving one-step and two-step equations

The Common Core State Standards identify a limited number of topics at each grade level, allowing enough time for students to achieve fluency, if not mastery of these concepts. The subsequent year of study builds on the concepts of the previous year.

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Mr. Hamel

Name: _____ Integers and solving equations

Answer the following.

(1) $-8 - 7 =$

(2) $+6 - 9 =$

(3) $-12 + 28 =$

(4) $-3 - (+4) =$

(5) $-26 - (-9) =$

(6) $38 - (15) =$

(7) $-8 \times -9 =$

(8) $-24 \div 3 =$

(9) $-4.6 + 2.9 =$

(10) $-75 - 8.9 =$

(11) $-3.6 \times -0.12 =$

(12) $-2 \div 0.25 =$

(13) $2\frac{1}{3} - 5\frac{4}{5} =$

(14) $-7\frac{5}{7} - 2\frac{3}{4} =$

(15) $-2\frac{6}{7} \times -2\frac{1}{10} =$

(16) $-3\frac{1}{3} \div 1\frac{4}{21}$

(1) $4x - 8 = -28$

(2) $-7x + 5 = -23$

(3) $\frac{x}{-9} - 8 = -21$

(4) $\frac{x}{6} + 15 = +9$

(5) $-2x - 6 = 12$

(6) $5x + 7 = -8$

(7) $\frac{x}{7} - 12 = 4$

(8) $\frac{x}{-6} + 8 = 4$

(9) $-60 = -9x + 3$

(10) $-22 = -6 + 2x$

(11) $-12x + 5 = -79$

(12) $-7x - 8 = 34$

(13) $6x - 9 = -51$

(14) $\frac{x}{-14} + 13 = -8$

(15) $\frac{x}{8} - 19 = -24$

(16) $8x + 19 = -21$

Name: _____

multiplying and dividing real numbers

Find each product. Simplify if necessary.

(8) $-8(12)$

(9) $8(12)$

(10) $7(-9)$

(11) $5 \cdot 4.1$

(12) $-7 \cdot 1.1$

(13) $10 \cdot (-2.5)$

(14) $6\left(-\frac{1}{4}\right)$

(15) $-\frac{1}{9}\left(-\frac{3}{4}\right)$

(16) $-\frac{3}{7} \cdot -\frac{9}{10}$

(17) $-\frac{2}{11}\left(-\frac{11}{2}\right)$

(18) $\left(-\frac{2}{9}\right)^2$

(19) $(-1.2)^2$

Find each quotient. Simplify if necessary.

(30) $48 \div 3$

(31) $-84 \div 14$

(32) $-39 \div (-13)$

(33) $\frac{63}{-21}$

(34) $-46 \div (2)$

(35) $-81 \div 9$

(36) $\frac{-121}{11}$

(37) $75 \div (-0.3)$

(40) $20 \div \frac{1}{4}$

(41) $-5 \div -\frac{5}{3}$

(42) $\frac{9}{10} \div \left(-\frac{4}{5}\right)$

(43) $-\frac{12}{13} \div \frac{12}{13}$

Name: _____

Adding and subtracting real numbers

Find each sum.

(18) $11 + 9$ (19) $17 + (-28)$ (20) $12 + (-9)$ (21) $-2 + 7$

(22) $-14 + (-10)$ (23) $-9 + (-2)$ (24) $3.2 + 1.4$ (25) $5.1 + (-0.7)$

(26) $-2.2 + (-3.8)$ (27) $\frac{1}{2} + \left(-\frac{7}{2}\right)$ (28) $-\frac{2}{3} + \left(-\frac{3}{5}\right)$ (29) $\frac{7}{9} + \left(-\frac{5}{12}\right)$

Find each difference.

(30) $5 - 15$ (31) $-13 - 7$ (32) $-19 - 7$ (33) $36 - (-12)$

(34) $-29 - (-11)$ (35) $-7 - (-5)$ (36) $8.5 - 7.6$ (37) $-2.5 - 17.8$

(38) $-2.9 - (-7.5)$ (39) $3.5 - 1.9$ (40) $\frac{1}{8} - \frac{3}{4}$ (41) $\frac{7}{16} - \left(-\frac{1}{2}\right)$

Solve the following equations. Show steps. NOT JUST ANSWERS.

(1) $6 + 3b = -18$

(9) $16 - 3p = 34$

(2) $-3 + 5x = 12$

(10) $15 + \frac{a}{6} = -21$

(3) $7n + 12 = -23$

(11) $-19 + \frac{c}{3} = 8$

(4) $\frac{f}{6} - 3 = 8$

(12) $-18 - 11r = 26$

(5) $-12 = 8 + \frac{f}{2}$

(13) $-9 = \frac{y}{-3} - 6$

(6) $13 = 8 - 5d$

(14) $\frac{w-7}{2} = -11$

(7) $\frac{k}{4} + 6 = -2$

(15) $\frac{f}{4} = \frac{f}{4}h + 4$

(8) $-22 = -8 + 7y$

(16) $6.42 - 10d = 2.5$

Name: _____

multiplying and dividing real numbers

Use the distributive property to simplify each expression.

(9) $6(a + 10)$

(10) $8(4 + x)$

(11) $(5 + w)5$

(12) $(2t + 3)11$

(13) $10(9 - t)$

(14) $12(2j - 6)$

(15) $16(7b + 6)$

(16) $(1 + 3d) 9$

(17) $(3 - 8c)1.5$

(18) $(5w - 15)2.1$

(19) $\frac{1}{4}(4f - 8)$

(20) $6\left(\frac{1}{3}h + 1\right)$

(21) $(-8z - 10)(-1.5)$

(22) $0(3.7x - 4.21)$

(23) $1\left(\frac{3}{11} - \frac{7d}{17}\right)$

(24) $\frac{1}{2}\left(\frac{1}{2}y - \frac{1}{2}\right)$

Write each expression as a sum or difference.

(25) $\frac{2x + 7}{5}$

(26) $\frac{17 + 5n}{4}$

(27) $\frac{8 - 9x}{3}$

(28) $\frac{4y - 12}{2}$

(29) $\frac{25 - 8t}{5}$

(30) $\frac{18x + 51}{17}$

(31) $\frac{22 - 2n}{2}$

(32) $\frac{42w + 14}{7}$

Simplify each expression.

(33) $-(20 + d)$

(34) $-(-5 - 4y)$













(35) $-(9 - 7c)$

(36) $-(-x + 15)$

Name _____

Multiplying and Dividing Integers

Simplify the expressions. Find your answer in the grid and color the square as shown with the expression.











1	$3(-5)$	
2	$-48/2$	
3	$4(3)$	
4	$-5(2)$	
5	$-8(-3)$	
6	$4(-4)$	
7	$-45/-3$	
8	$32/2$	
9	$-36/3$	
10	$-40/-4$	
11	$1(-1)(-1)$	
12	$(-1)(-1)(-1)$	

-24		-16	-15		15
	1	-1	24	-10	
10	-15	24	-1	10	-12
-1	16	-12	-16	12	16
	-10	10	-15	1	
-24		12	24		15

Name _____

Solving Equations

Solve the equations. Find your answer in the grid and color the square as shown with the equation.

1	$3(x - 1) = -15$	
2	$-2x + 5 = -1$	
3	$x/-3 + 2 = 4$	
4	$-x - 3x + 5 = 5$	
5	$4(x + 2) = 4$	
6	$x/-2 - 4 = -8$	
7	$-x + 4x + 6 = -3$	
8	$6x - 5 = 7$	
9	$x/4 + 3 = 6$	
10	$2(x + 4) = 4$	

-4		-3		0
	-2	2	8	
12	-6		-6	-1
	0	2	-4	
8		3		-2

Tic Tac Math Spiral Review 7th Grade

Directions: This activity is like Tic-Tac-Toe. You can complete all the questions if you work independently or work with a partner. If you work with a partner, decide who will be "X" and who will be "O." Take turns solving each problem. Mark your "X" or "O" in the box you solve. The winner is the player who solves three-in-a-row. Don't forget to try to block your partner!

<p>Harry can clean 2 cars in $\frac{1}{4}$ of an hour. How many cars can he clean per hour?</p> <p>A. 4 cars B. 6 cars C. 8 cars D. 10 cars</p> <p style="text-align: right;"><i>CC.7.RP.1</i></p>	<p>Betsy runs her own cake business and had to pay \$135 for electricity and \$3.50 for each cake that was made. If she made 100 cakes last month, how much income would she need to make to break even for the month?</p> <p>A. \$135 B. \$215 C. \$350 D. \$485</p> <p style="text-align: right;"><i>CC.7.NS.1a</i></p>	<p>Mark begins on the 3rd floor of an elevator and travels up 7 floors, down 4 floors and up 2 floors. What floor does he end up on?</p> <p>A. 5th B. 6th C. 7th D. 8th</p> <p style="text-align: right;"><i>CC.7.NS.1b</i></p>
<p>Which expression is equivalent to the following expression?</p> <p style="text-align: center;">$4(x + 5) - 2(x - 1)$</p> <p>A. $2x + 6$ B. $2x + 22$ C. $2x + 4$ D. $2x + 18$</p> <p style="text-align: right;"><i>CC.7.EE.1</i></p>	<p>Draw a number line to represent the following problem.</p> <p style="text-align: center;">$-1 - 5$</p> <p style="text-align: right;"><i>CC.7.NS.1</i></p>	<p>A square has a side length of 4 inches is enlarged to be 3 times larger. How will the areas compare?</p> <p>A. The new area will be 3 times larger. B. The new area will be 9 times larger. C. The new area will be 12 times larger. D. The new area will be 16 times larger.</p> <p style="text-align: right;"><i>CC.7.G.1</i></p>
<p>If a person wanted to estimate the population of people in the city who ride the subway, what would be the best way to collect this information?</p> <p>A. Ride the subway and count the number of people who are seen throughout the day. B. Go to a local police station and ask them to predict the number. C. Walk up to 50 people on the street and ask them if they ride the subway. D. Work with the subway system to create a poll for the city people to fill out next time they are doing a city-wide census or another similar event.</p> <p style="text-align: right;"><i>CC.7.SP.1</i></p>	<p>Select the best estimate for the number of people who wear glasses at the newscast television station if in a sample, 8 out of the 20 people wear glasses and there are 250 total people who work at the station.</p> <p>A. 40 B. 60 C. 80 D. 100</p> <p style="text-align: right;"><i>CC.7.SP.2</i></p>	<p>Jeff knows the two picture frames are similar in shape. If the one frame is 8 inches by 10 inches, the other frame could be 12 inches by what?</p> <p>A. 8 inches B. 9.6 inches C. 13 inches D. 15 inches</p> <p style="text-align: right;"><i>CC.7.RP.2</i></p>

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Jenny can walk 0.25 miles in 12 minutes. How far can she walk in an hour?

- A. 0.02 miles per hour
- B. 0.8 miles per hour
- C. 1.25 miles per hour
- D. 48 miles per hour

CC.7.RP.1

What is the math problem that represents the given number line?



- A. $-4 + 2 = 6$
- B. $-4 + 6 = 2$
- C. $2 - 6 = -4$
- D. $2 - (-4) = 6$

CC.7.NS.1

Which of the following expressions are equivalent to the given expression?

$$4(x + 2) - 2x$$

- A. $2x + 2$
- B. $4x - 6$
- C. $2x + 6$
- D. $2x + 8$

CC.7.EE.1

Which method collection would Sheri use to collect the most random sample as to how many people in her middle school like to draw?

- A. Ask everyone in her first period class
- B. Ask every seventh grader in the school.
- C. Ask for volunteers to come to the office to answer her survey.
- D. Ask 50 students in her school who are chosen by a computer selecting student ID numbers.

CC.7.SP.1

Given the rectangle below, draw a rectangle that has a scale factor of 1.5.

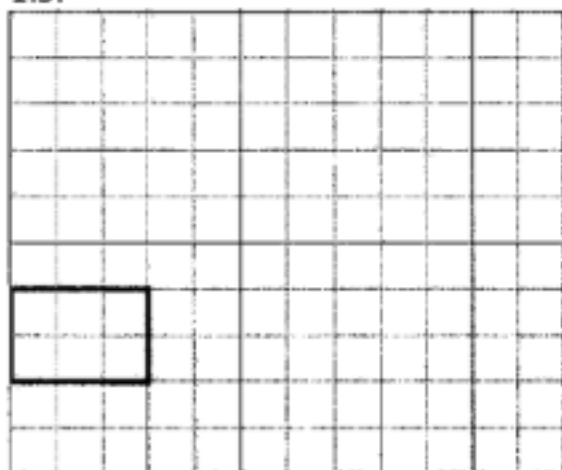
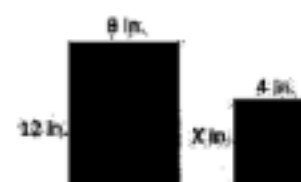


Image created using Desmos

CC.7.G.1

Given the two pictures below are proportional, what is the missing length in the second picture?



- A. 24 inches
- B. 12 inches
- C. 6 inches
- D. 4 inches

CC.7.RP.2

Which situation below would represent a quantity equal to zero?

- A. Betsy opened the window and Tom closed the window.
- B. Charles walked 5 miles while Charis only walked $\frac{1}{5}$ of a mile.
- C. Frank received a 100% on his Math quiz three weeks in a row.
- D. The temperature dropped 15 degrees in one day.

CC.7.NS.1a

Caleb went out to eat at a restaurant and is trying to determine his tip. With x representing his total bill, which one of these ways is **NOT** a way to find his total bill with tip, if he wants to leave a 20% tip?

- A. $x + 0.20x$
- B. $x + 0.20$
- C. $1.2x$
- D. $0.1x + x + 0.1x$

CC.7.EE.2

Brendan draws a triangle that has the angles 45 degrees, 90 degrees, and 45 degrees. How many other unique triangles could be drawn with these same qualities?

- A. There will be only 1 unique triangle so no other triangles can be drawn.
- B. It is impossible to draw a triangle with these requirements.
- C. Only 2 other unique triangles can be drawn.
- D. More than 2 unique triangles can be drawn.

CC.7.G.2

Tic Tac Math Spiral Review 7th Grade

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The temperature begins at 45° and then dropped 13° throughout the day. What is the current temperature?

- A. 13°
- B. 32°
- C. 45°
- D. 58°

CC.7.NS.1b

Given a circle with a diameter of 6 inches, find the area, using 3.14 for pi.

- A. 18.84 square inches
- B. 28.26 square inches
- C. 59.15 square inches
- D. 113.04 square inches

CC.7.G.4

Micah and his family spend \$25.15 at a restaurant. If the family wants to leave a 20% tip, how much would the total bill be?

- A. \$1.26
- B. \$5.03
- C. \$30.18
- D. \$26.41

CC.7.EE.3

George surveys 50 students in his middle school about what their favorite subject is.

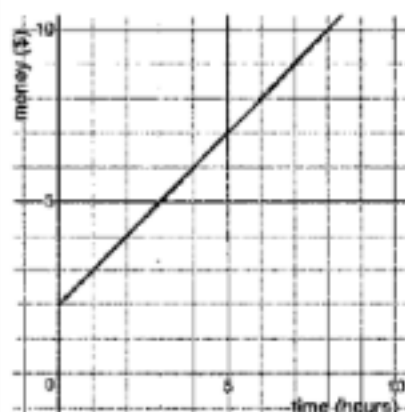
Subject	# of Students
Science	10
Social Studies	18
Language Arts	7
Math	15

Based on the results on the table, what would be the most reasonable estimation of how many of the entire school (150 students) choose Math as their favorite subject?

- A. 15
- B. 30
- C. 40
- D. 45

CC.7.SP.2

The graph below represents the relationship of time and money for a dog walker. Does this graph represent a proportional relationship? Why or why not?

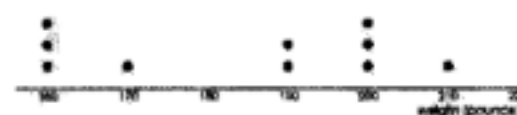


Picture created with Desmos.com

CC.7.RP.2a

The dot plots below represent the weights of 10 players for two different baseball teams.

Team 1



Team 2



Which statement below is correct?

- A. Team 1 has a higher range than Team 2.
- B. Team 1 has a higher median than Team 2.
- C. Team 2 has a higher mean than Team 1.
- D. Team 2 has a higher MAD than Team 1.

CC.7.SP.3

Given the figure below, when it is sliced horizontally, what 2d shape will result?



- A. rectangle
- B. circle
- C. semicircle
- D. line

CC.7.G.3

Below are the results of the two teams' swim team scores.

Team 1	9.6	9.5	8.9	9.5
Team 2	9.2	10	9.5	9.3

Which is a true statement about the mean calculations?

- A. Both means are equal.
- B. Team 1 has a higher mean than Team 2.
- C. Team 2 has a higher mean than Team 1.
- D. The means are not able to be determined with only 4 numbers.

CC.7.SP.4

Sandy writes the problem $4 + 3 = 7$ on her paper. What is another equation that is equivalent?

- A. $4 + (-3)$
- B. $4 - (-3)$
- C. $(-4) + 3$
- D. $-4 - (-3)$

CC.7.NS.1c

Tic Tac Math Spiral Review 7th Grade

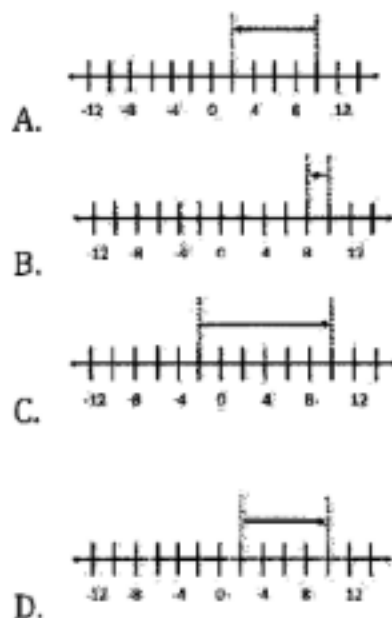
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Jason went with his friends to the movies. They spent a total of \$36. \$12 was spent on popcorn. The rest was spent on the tickets. If each ticket is \$6, how many people went to the movies (including Jason)?

- A. 2
- B. 4
- C. 6
- D. 8

CC.7.EE.4

George has \$10. He goes to the store and now has \$2. Which number line correctly represents this story?



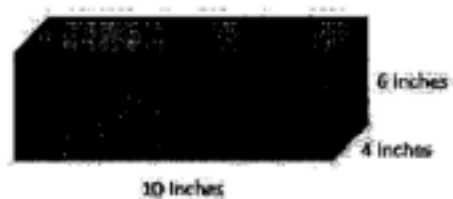
CC.7.NS.1c

A bag of marbles contains 4 blue marbles, 10 red marbles, 8 yellow marbles, and 6 green marbles. What are the chances of someone selecting a white marble?

- A. 0
- B. $\frac{1}{2}$
- C. 1
- D. Greater than 1

CC.7.SP.5

Jodi wants to wrap the present below. How much wrapping paper will she need?



- A. 120 square inches
- B. 123 square inches
- C. 240 square inches
- D. 248 square inches

CC.7.G.5

Scott is trying to determine what restaurant to go to for dinner. He has it narrowed down to a burger place or a chicken place. What could be an experiment he could develop to figure out where to go for dinner?

If a number cube (1-6) is rolled 100 times, about how many times would you expect the number cube to land on a 1?

- A. 10
- B. 17
- C. 25
- D. 34

CC.7.SP.7

CC.7.SP.6

Brandy flips a coin (H or T) and rolls a number cube (1-6). What is the probability of landing on "H" and rolling a "6"?

- A. $\frac{1}{12}$
- B. $\frac{1}{8}$
- C. $\frac{1}{4}$
- D. $\frac{1}{2}$

CC.7.SP.7a

What is the value of the given expression?

$$\frac{1}{2} + (-4 - 6) - 1\frac{1}{2}(6)$$

- A. -66
- B. $-18\frac{1}{2}$
- C. -18
- D. $-10\frac{1}{2}$

CC.7.NS.1d

Given the table below, what is the constant of proportionality?

X	1	2	4	5
Y	3	6	12	15

- A. $\frac{1}{3}$
- B. 1
- C. 3
- D. 6

CC.7.RP.2b