

First & Last Name: \_\_\_\_\_

# Accelerated Math Diagnostic for Rising 8<sup>th</sup> Graders

## DIRECTIONS:

**Complete as many of the problems below, as you can. You may not use a calculator. You may not ask for or have help. You may not reference notes, the internet, etc. For every answer you do not know or cannot remember how to answer, please skip it and leave it blank.**

This test will take some time to complete, so please do not feel you have to complete it all at once. When you do finish it, submit it to me online at: <http://www.kennedyskids.com/submit-assignments.html> If you have any difficulty submitting it, please contact me through Remind.

\*\* This is only a diagnostic assessment. It does not count as a grade. It does not count against you. It shows me what you know and shows me how to support you this summer and next year. 😊 \*\*

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### **MGSE7.NS.1 – Show your work.**

1) Nate has  $6\frac{3}{5}$  yards of fabric. He uses  $3\frac{1}{2}$  yards of fabric to 1 make a pillow. How much fabric does he have left?

### **MGSE7.NS.2 – Show your work.**

2) Olivia orders 4 ham sandwiches at the deli. The total amount was \$30.52. How much did each sandwich cost?

3) Find  $\frac{3}{5} \times 4\frac{1}{3}$ . Write in simplest form.

### **MGSE7.NS.3 – Show your work.**

4) Mrs. Cheng has \$18 deducted monthly from her checking account for her gym membership. What integer represents the change in her account for a year of gym membership?

### **MGSE7.RP.1 – Show your work.**

5) If a person walks  $\frac{1}{2}$  mile in each  $\frac{1}{4}$  hour, compute the unit rate as the complex fraction  $\frac{\frac{1}{2}}{\frac{1}{4}}$  miles per hour.

**MGSE7.RP.2a**

6) Which of the following situations form a proportional relationship with milk that costs \$3.29 per gallon?

- A. 3 gallons of milk for \$6.57  
B. 5 gallons of milk for \$16.45  
C. 4 gallons of milk for \$13.16  
D. 9 gallons of milk for \$29.61

**MGSE7.RP.2b – Show your work.**

7) The table shows the cost of blueberries at a local farmer's 10 market. What is the unit price for one ounce of blueberries?

Ounces	Cost
6	\$1.80
12	\$3.60
18	\$5.40

**MGSE7.RP.2c – Show your work.**

8) On a map, 3 inches represent an actual distance of 42 miles. If the actual distance between two cities is 322 miles, how many inches apart will the two cities be on the map?

**MGSE7.RP.3 – Show your work.**

9) Charlene bought her friends lunch. The bill came to \$52.80 before Charlene added an 18% service tip. How much did she add for the service tip?

**MGSE7.RP.3 – Show your work.**

10) The school band sold 200 tickets to their concert. If 90 of the tickets were adult tickets, what percent of the tickets sold were adult tickets?

**MGSE7.EE.1 – Show your work.**

11) Randy is playing a number game. Beginning with the number 8, he adds 4, multiplies by 5, and then divides by -10. He then subtracts 2. What number does he find at the end of the game?

**MGSE7.EE.2 – Show your work.**

12) Simplify and write an equivalent expression to  $5x + 2 - x + 10$ ?

**MGSE7.EE.2**

13) The table shows the charges for a taxi ride in a city.

Charges for Each Taxi Ride	
Charges	Rate
Mileage Charge	\$0.75 Each Mile
City Gas Tax	\$0.10 Each Mile
Tourist Charge	\$2.50

If a taxi ride is  $m$  miles, which expression can be used to find the total charge of the ride?

**F**  $2.50m + 0.75$

**H**  $0.10m + 3.25$

**G**  $0.75m + 2.50$

**J**  $0.85m + 2.50$

**MGSE7.EE.3 – Show your work.**

14) Michael's age is 5 years younger than Jordan. Jordan is 4 years younger than Keanu. Keanu is 17 years old. How old is Michael?

**MGSE7.EE.3**

15) An electrician charges \$30 for a house visit and \$55 for each hour of work. If Mrs. Firewalks was charged \$222.50 for work, which can be used to find the number of hours that the electrician worked?

**A.** Subtract 55 from 222.50 and then divide the difference by 30.

**B.** Subtract 30 from 222.50 and then divide the difference by 55.

**C.** Divide 222.50 by 55.

**D.** Divide 222.50 by 30.

**MGSE7.EE.4**

16) Jeb's weight  $w$  is  $\frac{1}{3}$  of Iago's weight  $a$ . Which equation could be used to find Jeb's weight?

**F**  $w = a - \frac{1}{3}$

**H**  $w = \frac{1}{3} + a$

**G**  $w = \frac{1}{3}a$

**J**  $w = a \div \frac{1}{3}$

**MGSE7.EE.4a – Show your work.**

17) A triangle has a height that is 5 units shorter than its base. If  $b$  represents the base and  $h$  represents the height, use the information in this question to write an equation to represent the area of the triangle.

**MGSE7.EE.4a – Show your work.**

18) Write an equation that shows the relationship between the x- and y-values in the table below.

x	y
2	4
4	6
6	8
7	9
10	12

**MGSE7.EE.4b – Show your work.**

19) What is the solution to the equation  $3t - 10 < 8$ ?

**MGSE7.G.1 – Show your work.**

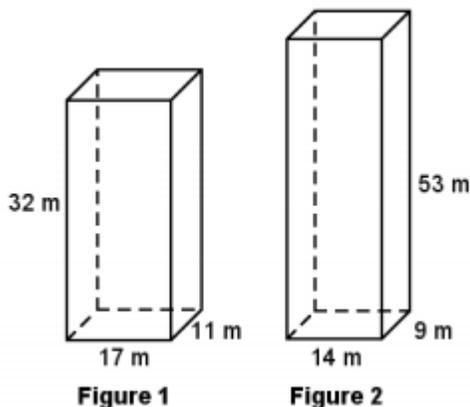
20) A blueprint shows a layout of a building. Every 3 inches in the blueprint represents 5 feet of the actual building. One of the walls on the blueprint is 21 inches long. What is the length of the actual wall?

**MGSE7.G.2 – Show your work.**

21) Diane draws an obtuse, isosceles triangle with one of the angles measuring  $35^\circ$ . What is the measure of the obtuse angle in her triangle?

**MGSE7.G.3 – Show your work.**

22) Use the dimensions of figure 2 to describe a vertical cross section that is parallel to the left and right faces.

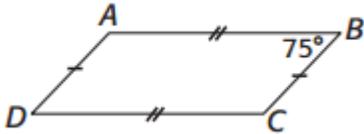


**MGSE7.G.4 – Show your work.**

23) The circumference of a circle is  $20\pi$ . What is the radius of this circle?  $C = 2\pi r$

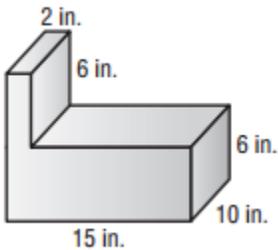
**MGSE7.G.5**

24) The measure of  $\angle B$  in parallelogram ABCD is  $75^\circ$ . What is the measure of  $\angle A$ ?



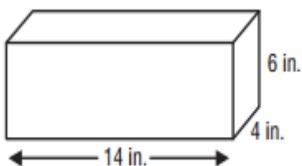
**MGSE7.G.6**

25) Find the surface area of the composite figure below.



**MGSE7.G.6**

26) The height of a box is 6 inches. The length of the box is 14 inches and the width of the box is 4 inches. 14 in. 4 in. 6 in. Which equation could be used to find the surface area of the box?



**A**  $s = 2 \cdot (14 \cdot 6) + 2 \cdot (4 \cdot 6)$       **C**  $s = 2 \cdot (14 \cdot 4) + 2 \cdot (14 \cdot 6) + 2 \cdot (6 \cdot 4)$

**B**  $s = (14 \cdot 4) + (14 \cdot 6) + (6 \cdot 4)$       **D**  $s = (14 \cdot 4) \cdot (14 \cdot 6) \cdot (6 \cdot 4)$

**MGSE7.SP.1**

27) Marilyn wants to know what the most popular sport is at her school. She randomly selects 12 players from the girls' lacrosse team to ask the question. Does her method create a representative sample of the population? Explain.

**MGSE7.SP.2**

28) There are 1,400 students in a school. A random sample of 50 students contains 7 students with birthdays in March. About how many students in the school have birthdays in March?

**MGSE7.SP.5**

29) There are 10 marbles in a bag: 1 blue, 4 yellow, 3 red, 28 and 2 white. If you choose a marble at random, which is the probability that you will NOT choose white?

**MGSE7.SP.6**

30) A hat contains cards with different colors. Annabella randomly selects a card from the hat and returns the card to the hat after noting the color. After randomly selecting a card 30 times, she picked a purple card 7 times. What would you estimate is the probability of Annabella randomly selecting a purple card based on her results?

**MGSE7.SP.7a**

31) What is the probability of rolling a number that is greater than 4 on a number cube?

**MGSE7.SP.7b**

32) Marissa selects a card in a hat, notes which color it is, and returns the card to the hat and repeats. After 70 trials, she finds that 12 of the cards are red, 38 are green, and 20 are purple. What are the experimental probabilities of drawing each color, based on these results?

**MGSE7.SP.8a**

33) Ricardo has three suit jackets: black, green, and white. He also has three shirts: white, black, and blue. What is the probability of Ricardo randomly selecting a suit jacket and a shirt that are the same color? Explain.

**MGSE7.SP.8b**

34) An employee of a company gets a three digit lock code to enter the building. The digits could be 1, 5, or 7. Identify the lock codes in the sample space that have at least two fives.

**MGSE7.SP.8c**

35) Tori is simulating a mother having 3 children. Since the probability of having a boy is about the same as the probability of having a girl, she flips a fair coin, with the coin landing heads up (H) representing a boy and the coin landing tails up (T) representing a girl. Based on the 14 trials shown in the table, what is an approximation of the probability of a mother having exactly 2 girls if she has 3 children?

Trial	Result	Trial	Result
1	H, H, T	8	T, H, T
2	T, H, T	9	H, T, T
3	H, H, H	10	H, H, H
4	T, T, T	11	T, H, H
5	T, H, T	12	H, H, T
6	H, H, T	13	T, T, H
7	H, T, T	14	T, H, H

**MGSE8.NS.1**

36) Which of the following sets of numbers does  $\sqrt{49}$  NOT belong?

- A. integer                      B. real number                      C. rational number                      D. irrational number

**MGSE8.NS.2**

37) Order the numbers from least to greatest:  $\frac{1}{2}$ ;  $\frac{3}{8}$ ; 1; 4;  $\sqrt{2}$

38) The area of a square is 8 square meters. About what is the length of one side of the square (to the nearest tenth)?

**MGSE8.EE1**

39) Simply and write an equivalent expression using the base of 4 to  $4^4 \times 4^{-6}$ .

**MGSE8.EE2**

40) What property allows the expression  $4.7x + 10.4 + 15.3x - 8.4x + 15.6$  to be simplified to the equivalent expression  $20x + 10.4 - 8.4x + 15.6$ ?

**MGSE8.EE3**

41) A thunderstorm cloud holds about 6,200,000,000 raindrops. Write the number in scientific notation?

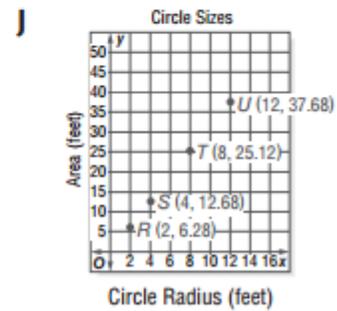
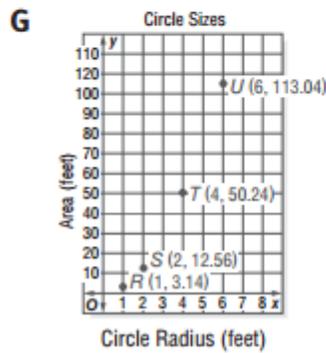
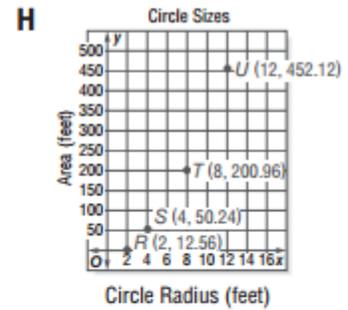
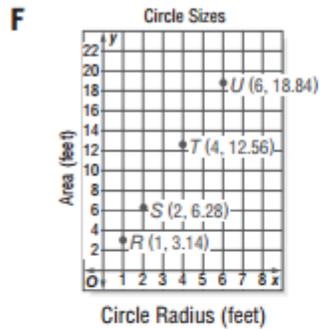
**MGSE8.EE4**

42) Light travels at a speed of about  $2.998 \times 10^8$  meters per second. Express this number in standard notation.

**MGSE8.EE5**

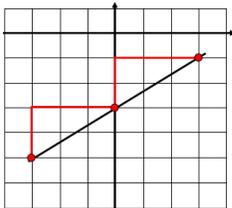
43) The table shows circles and 4 their corresponding diameters. Which of the following graphs show the correct relationship between the radius and the area of each circle?

Circles	
Circle	Diameter (feet)
R	2
S	4
T	8
U	12



**MGSE8.EE6**

44) Find the slope of the line using the similar triangles as a guide. Each unit square is 1 cm.



**MGSE8.EE7a**

45) 11 more than five of a certain number is twenty more than 2 times of that number. What is the number?

**MGSE8.EE7b**

46) What is the solution of the equation  $\frac{1}{3}(x + 15) = 7$ ?

**MGSE8.EE8a**

47) What is true concerning the lines graphed by the system of equations shown below? The lines:

$$\begin{cases} 8x + 6 = 2y \\ 12x - 3 = 3y \end{cases}$$

- A. intersect      B. are parallel      C. are perpendicular      D. are the same

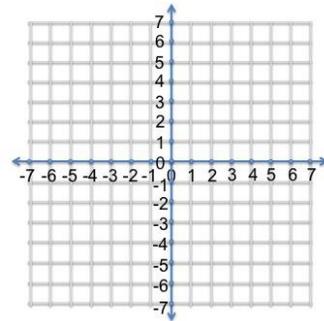
**MGSE8.EE8b**

48) Line A and B have the following points:

Line A: (2, 4) and (-3, 5)

Line B: (7, 1) and (-5, -1).

Find the point where the two lines intersect.

**MGSE8.EE8c**

49) Yesterday, Kate and her cousin Robert went out for a movie. There they spent \$50 in total. Robert spent \$10 more than Kate. How much did Kate spend? Use system of equations to solve.

**MGSE8.F1**

50) On average, a dog runs 5.5 times faster than a child. Which function can be used to find the speed of a dog, given the speed of the child?

**F**  $f(c) = 5.5c$

**H**  $f(c) = c + 5.5$

**G**  $f(c) = \frac{5.5}{c}$

**J**  $f(c) = \frac{c}{5.5}$

**MGSE8.F2**

51) Which of the functions below has the greatest rate of change?

**I**  $f(x) = 4x - 3$

**II**  $f(x) = \frac{1}{2}x + 5$

**III**

x	f(x)
1	6
2	12
3	18
4	24

**MGSE8.F3**

52) What is the slope and y-intercept of the equation  $6x - 1 = 3y - 10$ ?

**MGSE8.F4**

53) What function is represented in the table?

$n$	$f(n)$
1	3
2	7
3	11
4	15
5	19
$n$	

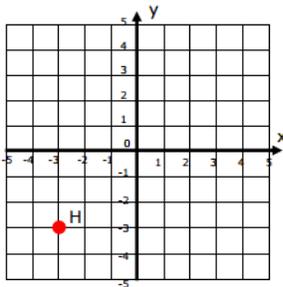
54) The delivery ramp at the Corner Café is a right triangle. The hypotenuse is 4 meters long. One leg is 3 meters long. What is the length of the other leg?

**MGSE8.F5**

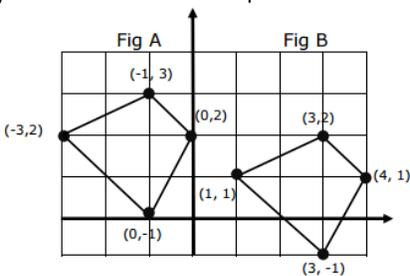
55) Where does the line go through and what is the slope and direction of the graph of the function  $f(x) = 4x$ ?

**MGSE8.G1**

56) Graph the image of H  $(-3,-3)$  after a rotation  $270^\circ$  clockwise around the origin.

**MGSE8.G2**

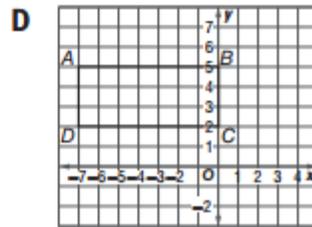
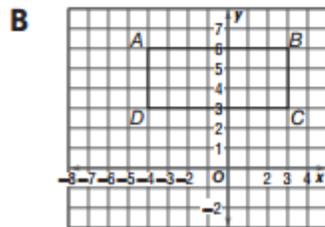
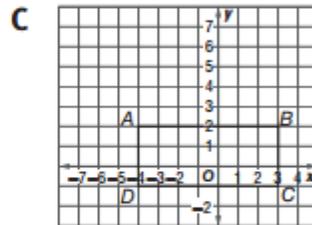
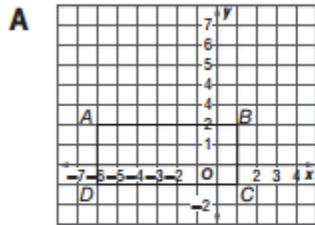
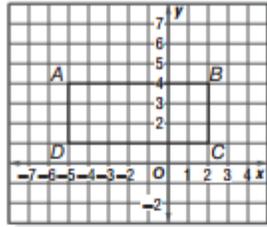
57) Describe the sequence of transformations that take place from Figure A to Figure B.



**MGSE8.G3**

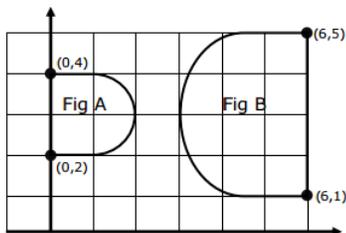
58) Rectangle ABCD is shown on the coordinate grid below.

Which of the following graphs represent the translation of Rectangle ABCD over the following:  
 $(x, y) \rightarrow (x+1, y-2)$ ?



**MGSE8.G4**

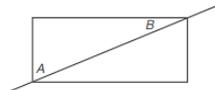
59) Describe the sequence of transformations that results in the transformation of Figure A to Figure B.



**MGSE8.G5**

60) A photo with a length of 3 inches and a width of 5 inches is enlarged to poster size. The poster and the photo are similar. The length of the poster is 21 inches. What is the width of the poster?

61) A rectangle is cut along its diagonal. The measure of  $\angle A$  is  $55^\circ$ . What is the measure of  $\angle B$ ?

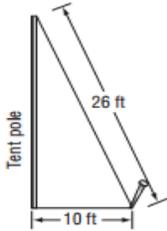


**MGSE8.G6**

62) Explain the proof of the Pythagorean Theorem.

**MGSE8.G7**

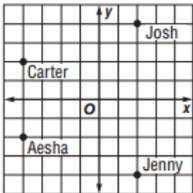
63) A 26-foot rope is used to brace a tent pole at the county fair. The rope is anchored 10 feet from the box of the pole.



How tall is the tent pole?

**MGSE8.G8**

64) The map below shows where four of Nahimana's friends live. Each unit on the map represents 1 mile. About how far apart do Aesha and Josh live?

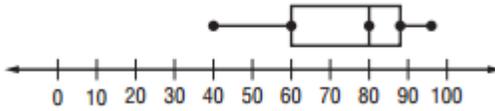
**MGSE8.G9**

65) A cylindrical water tower is 24 feet high and has a diameter of 20 feet. Approximately how many cubic feet of water could the tower hold?

**MGSE8.SP1**

66) The scatter plot below shows the yearly advertising expenditures and the relative sales for a small company. What can be concluded about the relationship between advertising and sales from this data?

67) The box plot shows a set of test scores. Which statement is correct?



- A. More students scored between 40 and 60 points than between 88 and 96 points.
- B. An equal number of students scored from 40 to 60 as from 88 to 96.
- C. The lowest score was 60.
- D. The highest score was 88.3

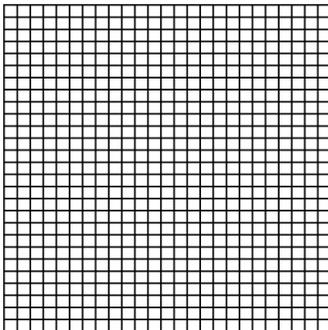
**MGSE8.SP2**

68) Is there any relationship between the rebound height of a ball when it's dropped and its second bounce height?

Drop Height	Rebound (1)	Rebound (2)
18	7	8
12	3	6
30	19	18
24	13	14
42	22	21
36	20	20
48	24	26

**MGSE8.SP3**

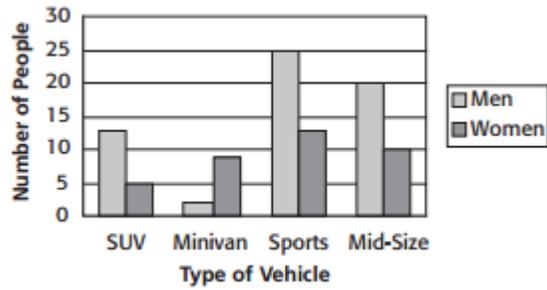
69) In a bakery, during Christmas week, bakers baked different flavors of cakes and used cherries. Make a scatter plot of cakes and cherries.



Cakes	10	12	1	15	5	8	7	10	11
Cherries	20	6	10	30	20	16	21	30	33

**MGSE8.SP4a**

70) A survey is taken to determine which type of vehicle is most popular. The data is shown in the bar graph below. What can you conclude about the survey?



- F. The survey is biased because most men do not favor sports vehicles.
- G. The survey is biased because there are more men surveyed than women.
- H. The survey is not biased because sports cars are most popular among both men and women.
- J. The survey is not biased because all car types are favored by both men and women.