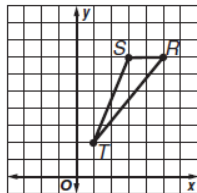


## Algebra First Quarter Review

- Determine if the expressions are equivalent.
  - $x + x + x$  and  $3x$
  - $-7 + 14x$  and  $-7(1 - 2x)$
  - $10x + 2 - 7x$  and  $3x - 2$
- Simplify.
  - $9(2a + 6) - a$
  - $2(3x - 5) + 4(x + 1)$
- Evaluate the expression for the given value of the variable.  $7(z + 2) + 9$  for  $z = 9$
- If  $5z - 8 = 27$  find the value of  $3z$ .
- Sylvie is going on vacation and has to drive 550 miles. If she has already traveled 62 miles in one hour and her current speed is 61 miles per hour, how much longer will it take Sylvie to reach her destination?
- Ann's cell phone plan costs \$40 a month plus \$.30 per text message. If Ann's bill last month was \$70 how many text messages did she send?
- Translate the word sentence into an inequality: "Two less than the product of a number and 3 is greater than 5."
- Solve and graph.  $\frac{e}{-3} \leq 2$
- Solve.  $9(k + 6) < 9k - 7$
- Solve and graph.  $b + 2 - 2b \leq -1$
- Solve.  $-x - 5 + 10x = 5 + 9x - 10$
- Solve.  $46a + 1 - 43a = 25$
- Solve.  $4(6x - 9) - 18x = -27 + 3x - 3$
- Solve:  $\frac{4x + 12}{6} < 8$
- A video store charges a monthly membership fee of \$6.00, but the charge to rent each movie is only \$2.00 per movie. Another store has no membership fee, but it costs \$4.00 to rent each movie. How many movies need to be rented each month for the total fees to be the same from either company?
- The volume of a cone is  $V = \frac{1}{3} \pi r^2 h$ . A farmer needs to determine the height of his silo. Solve the volume of a cone for  $h$ .
- Solve the equation  $\frac{3a - 2b}{5} = -c$  for  $a$ .
- Ms. Salgado needs to have her car repaired but does not want to spend more than \$375 for the repairs. The mechanic says that the part needed for the repair will cost \$100 and the labor will cost an additional \$40 per hour. Write an inequality to represent the greatest number of hours the mechanic can work without exceeding Ms. Salgado's budget?
- Rhonda has \$355 in her savings account. She wants to save no less than \$505. Write and solve an inequality to determine how much more money Rhonda must save to reach her goal.
- Sara earns \$9 per hour babysitting and has already saved \$27. She needs at least \$108 to attend a concert. Write and solve an inequality to determine how many hours Sara must babysit.
- Skate World offers birthday parties for a fee of \$110 plus \$4 per person. If you can spend no more than \$158 on your party, what is the maximum number of people who can attend?
- Justin and Tyson are beginning an exercise program to train for football season. Justin weighs 150 lbs and hopes to gain 2 lb per week. Tyson weighs 195 lbs and hopes to lose 1 lb per week. If the plan works, in how many weeks will the boys weigh the same amount? What will that weight be?
- The school band will sell pizza to raise money for new uniforms. The supplier charges \$100 plus \$4 per pizza. If the band members sell pizzas for \$7 each, how many pizzas will they have to sell to make a profit?
- Kenia and Randi are planting tulip bulbs. Kenia has planted 60 bulbs and plants at a rate of 44 bulbs per hour. Randi has planted 96 bulbs and plants at a rate of 32 bulbs per hour. In how many hours will Kenia and Randi have planted the same number of bulbs? How many bulbs will that be?

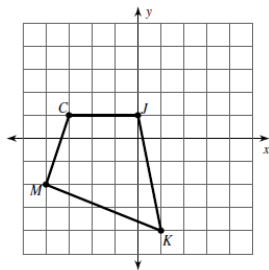
25. The Fun Guys game rental store charges an annual fee of \$15 plus \$5.50 per game rented. The Game Bank charges an annual fee of \$31 plus \$3.50 per game. For how many game rentals will the cost be the same at both stores? What is that cost?

26. List the coordinates of the image of the triangle for each transformation.



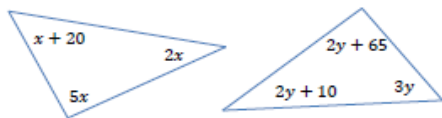
- translation left 3 units and down 2 units
- rotation 270 degrees clockwise
- dilation by a scale factor of 2
- reflection across the x-axis

27. Find the coordinates of the quadrilateral after the transformation.

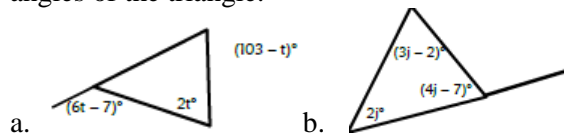


- reflect across the y-axis and translate up 3
- rotate 90° clockwise and dilate by a factor of 1/2

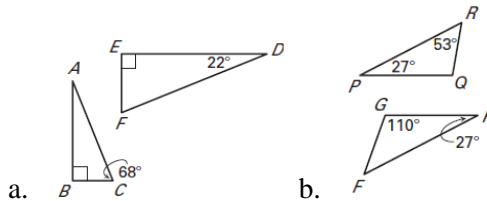
28. Determine if the two triangles are similar.



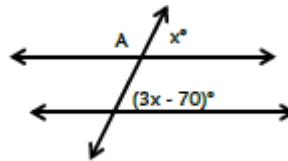
29. Find the measures of the interior and exterior angles of the triangle.



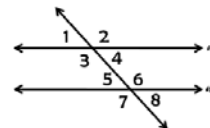
30. Use the Angle-Angle Similarity Postulate to determine if the triangles are similar.



31. Find the measure of  $\angle A$ .



32. Given  $m\angle 3 = 133^\circ$ , find the following.



- $m\angle 7$
- $m\angle 5$
- List the pairs of corresponding angles.
- List the pairs of vertical angles.
- List the pairs of consecutive angles.

33. Simplify.  $(2j^2k^4)^{-2} \cdot (4k)^3$

34. Simplify.  $\frac{a^2b^{-4}e^0}{ac^3d^{-2}}$

35. Simplify.  $\left(\frac{4x^9}{x^4y^9}\right)^{-2}$

36. Simplify.  $\left(\frac{3x^6}{x^{-2}y^5}\right)^3$

37. Order the numbers from greatest to least. 8,700,  $1.97 \times 10^3$ ,  $3.98 \times 10^4$ ,  $1.09 \times 10^2$

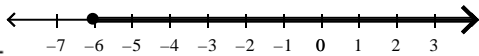
38. The mass of an organism is  $3.9 \times 10^{-5}$  grams. If there is a population of  $8.1 \times 10^7$  of these organisms, what is the total mass of the population?

39. A prize valued at  $(1.72 \times 10^5)$  dollars is to be shared by  $(2 \times 10^2)$  people. How much will each person receive?

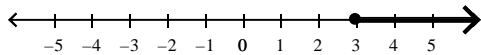
## Algebra First Quarter Review Answer Section

### SHORT ANSWER

- equivalent
  - equivalent
  - not equivalent
- $17a + 54$
  - $10x - 6$
- 86
- $z = 21$
- 8 hours
- 100 text messages
- $3x - 2 > 5$



- $x \geq -6$
- no solution



- $b \geq 3$
- all real numbers
- $a = 8$
- $x = 2$
- $x < 9$
- 3 movies
- $h = \frac{3v}{\pi r^2}$
- $a = \frac{-5c + 2b}{3}$
- $40x + 100 \leq 375$
- $355 + x \geq 505; x \geq 150$
- $9h + 27 \geq 108; h \geq 9$
- 12 people
- 15 weeks; 180 lbs
- 34 pizzas
- 3 hours; 192 bulbs
- 8 games; \$59
- $R'(2,5)$   $S'(0,5)$   $T'(-2,0)$
  - $R'(-7,5)$   $S'(-7,3)$   $T'(-2,1)$
  - $R'(10,14)$   $S'(6,14)$   $T'(2,4)$
  - $R'(5,-7)$   $S'(3,-7)$   $T'(1,-2)$
- $C'(3,4)$   $J'(0,4)$   $K'(-1,-1)$   $M'(4,1)$
  - $C'(.5,1.5)$   $J'(.5,0)$   $K'(-2,-.5)$   $M'(-1,2)$
- $x = 20; y = 15$

*The triangles are not similar because there are not two pairs of corresponding congruent angles.*

29. a. interior:  $44^\circ, 81^\circ, 55^\circ$  exterior:  $125^\circ$   
b. interior:  $42^\circ, 61^\circ, 77^\circ$  exterior:  $103^\circ$
30. a. *The triangles are similar because they have two pairs of corresponding congruent angles.*  
b. *The triangles are not similar because they do not have two pairs of corresponding congruent angles.*
31.  $x=35, \angle A=145^\circ$
32. a.  $133^\circ$   
b.  $47^\circ$   
c. 1 and 5; 3 and 7; 2 and 6; 4 and 8  
d. 1 and 4; 2 and 3; 5 and 8; 6 and 7  
e. 3 and 5; 4 and 6
33.  $\frac{16}{j^4 k^5}$
34.  $\frac{ad^2}{b^4 c^3}$
35.  $\frac{y^{18}}{16x^{10}}$
36.  $\frac{27x^{24}}{y^{15}}$
37.  $3.98 \times 10^4, 8,700, 1.97 \times 10^3, 1.09 \times 10^2$
38.  $3.159 \times 10^3$  grams
39.  $8.6 \times 10^2$  dollars per person