Accelerated Coordinate Algebra   Name_____

Spring 2017--Benchmark 1-- Study Guide

(MCC9-12.N.Q.1) Choose the best answer.

1) The new Corvette can go from 0 to 60 miles per hour in 3.4 seconds. This equates to 1320 feet in 11 seconds. Find the rate in miles per hour.

(MCC9-12.A.CED.2, MCC9-12.A.REI.5) Solve the word problem.

2) The senior classes at High School A and High School B planned separate trips to the county fair. The senior class at High School A rented and filled 12 vans and 4 buses with 312 students. High School B rented and filled 6 vans and 5 buses with 300 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

(MCC9-12.A.CED.1) Choose the best answer.

3) The length of a rectangle is $x + 5$ *inches* and the width is 5 *inches*. The perimeter of the rectangle is greater than 100 square inches. Which inequality can be used to find x?

A) $5 + (x+5)+ 5 + (x +5)<100$ B) $5 + x + 5 + 5 + x + 5 \geq 100$

C) $5 + (x+5) + 5 + (x +5)>100$ D) $5 + x + 5 + 5 + x + 5 \leq 100$

(MCC9-12.F.IF.2) Choose the best answer.

4) To rent a boat at Lanier Lanier Islands you must pay $160 rental fee, plus $32.50 per hour. What equation below would give you the total amount you would have to pay?

A) c(x)=160x   B) c(x)=192.50x   C) c(x)=160x + 32.50   D) c(x)=32.50x +160

(MCC9-12.A.CED.2)

5) Which equation describes the line that contains (1,5) and has a slope of 2?

A) y=2x + 9   B) y=2x - 9   C) y=2x + 3   D) y=2x - 3

(MCC9-12.F.IF.2)

6) Which is the dependent variable in the following situation?
A decorator charges $ 40 for an initial consulation and then $80 per hour.

A) The number of hours   B) The consultation fee

C) The colors used in the decorating   D) Cost of using the decorator

-1-Made with Infinite Algebra 1.

(MCC9-12.A.CED.1) Choose the best answer.

7) A parking lot holds 42 cars. There are 26 cars in the lot already. Which inequality can be solved to show the numbers of cars c that can still park in the lot?

   A) $26 + c < 42$ B) $26 + 42 \leq c$ C) $26 + 42 < c$ D) $26 + c \leq 42$

(MCC9-12.A.CED.2, MCC9-12.A.REI.5) Solve the word problem.

8) The school that Julia goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 8 adult tickets and 13 student tickets for a total of $115. The school took in $82 on the second day by selling 4 adult tickets and 10 student tickets. What is the price each of one adult ticket and one student ticket?

(MCC9-12.A.CED.1)

9) The fuel for a chain saw is a mix of oil and gasoline. The ratio of ounces of oil to gallons of gasoline is 7:19. There are 38 gallons of gasoline. How many ounces of oil are there?

   A) 20 ounces   B) 103.1 ounces   C) 3.5 ounces   D) 14 ounces

(MCC9-12.F.IF.2) Choose the best answer.

10) A decorator charges $40 for an initial consulation and then $80 per hour. Which function below gives the total amount you would be charged?

   A) The function cannot be determined from the given information.   B) c(x)= 40 + 80x
   C) c(x)= 40x + 80   D) c(x)= 120x

(MCC9-12.A.CED.1)

11) An architect built a scale model of a shopping mall. On the model, a circular fountain is 20 inches tall and 22.5 inches in diameter. The actual fountain is to be 8 feet tall. What will be the diameter of the fountain?

**(MCC9-12.F.IF.1)**

12) Which relation is NOT a function?

   A) (-5, 26), (5, 36), (10, 16), (15, 6)
   B) (0, 0), (1, 1), (6, 6),(12,12)
   C) (6, 2), (-1, 2), (-3, 2), (-1, 5)
   D) (6, 2), (2, 6), (3, 9), (4, 8)

(MCC9-12.N.Q.1) Choose the best answer.

13) There are 60 books on a shelf, some fiction and some nonfiction. The number of fiction books, x, is 6 more than twice the number of nonfiction, y. Which system can be used to find how many of each type are on the shelf?

A) $x + 60 = y$
$x = 2(y + 6)$

B) $x - y = 60$
$x + y = 2y$

C) $x + y = 60$
$x = 2y + 6$

D) $x + 60 = y$
$x = 2y - 6$

(MCC9-12.F.IF.2)

14) Evaluate $f(x)=3x^2 - 4$ when $x = -2$.

15) Which is the independent variable in the following situation?
"To rent a boat at Lake Lanier Islands you must pay $160 rental fee, plus $32.50 per hour.t"

A) The cost per hour

B) The rental fee

C) The number of hours

D) The cost of renting a boat

(MCC9-12.A.REI.6)

16) Photocopier A can print 35 copies per minute. Photocopier B can copy 35 copies per minute. Copier B is started and makes 10 copies. Copier A is then started. If the copiers continue, will the number of copies from machine A ever be equal to the number of copies from machine B? Explain your answer.

(MCC9-12.G.GPE.6, MCC9-12.G.GPE.7, MCC9-12.A.CED.2)Find the midpoint of the line segment with the given endpoints.

17) $(8, 6), (-2, 4)$

(MCC9-12.G.GPE.6, MCC9-12.G.GPE.7, MCC9-12.A.CED.2)Find the distance between each pair of points.

18) $(0, 3), (-2, -2)$

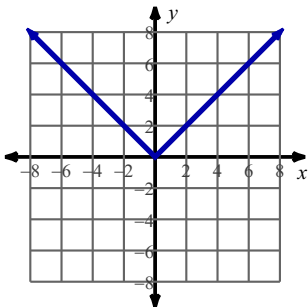**Sketch the solution to each system of inequalities.**

19) $x \le 1$
$y > -x + 3$

A)
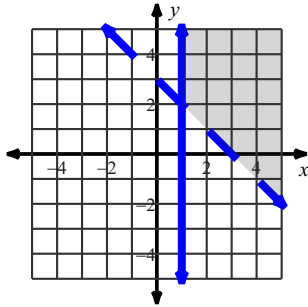
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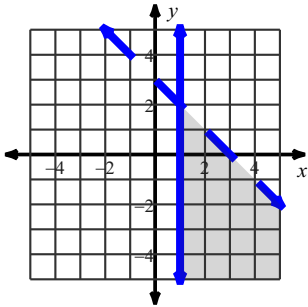
C)
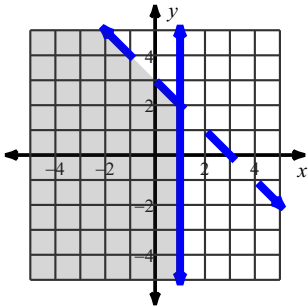
D)
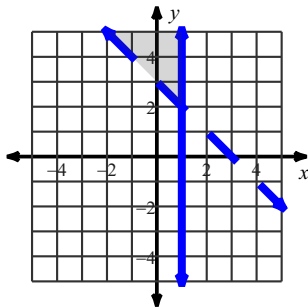
(MCC9-12.F.IF.1)

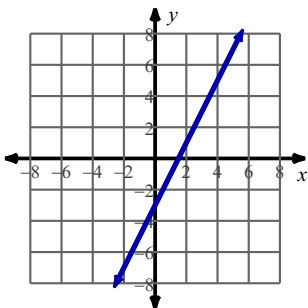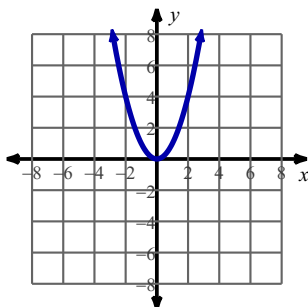20) Which relation is NOT a function?

A)
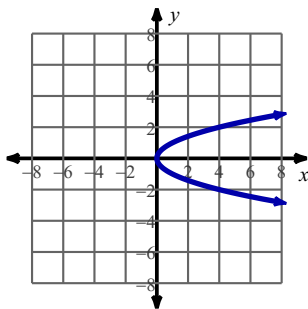
B)

C)

D)

(MCC9-12.A.REI.6)

21) The Strauss family is deciding between two lawn services. Green Lawn charges a $49 start up fee, plus $29 per month. Grass Team charges a $25 startup fee, plus $37 per month.

In how many months will the cost of both services be the same?

What will that cost be?

(MCC9-12.F.BF.3)

22) Describe the transformations for the graph of $y = -\dfrac{4}{3}x + 4$ from the parent graph $y = x$.

23) Describe the transformations for the graph of $y = \dfrac{1}{2} \cdot 2^x + 1$ from the parent graph $y = 2^x$.

(MCC9-12.A.REI.11)

24) Tell whether the ordered pair (-3, -1) is a solution to the system.

   y>-2
   y< x+4

25) Which of the following systems of equations has exactly one solution?

   A) $x + y = -6$ B) $-x - y = 4$
       $-x - y = 6$ $x + y = 12$
   C) $x + 3y = 15$ D) $x - y = 4$
       $2x - 3y = -6$ $-x + y = 6$

(MCC9-12. F.LE.2)

26) During a certain period of time, about 70 northern sea otters had an annual growth rate of 18%. Find the number of sea otters in 4 years.

27) Samuel invests $50,000 at a rate of 3% compounded monthly. What is his investment worth in 6 years?

(MCC9-12.F.LE.2)

28) The half life of iodine-125 is 60 days.How much of a 450 gram sample would be left after 480 days? Round to the nearest hundredth.

(MCC9-12.F.IF.7e, MCC9-12. F.BF.1a, MCC9-12.F.LE.1c)

29) The annual tuition at a community college since 2001 is modeled by the equation $C = 2000 \cdot 1.08^n$ where C is the tuition cost and n is the number of years since 2001. What was the tution cost in 2001?

30) The annual tuition at a community college since 2001 is modeled by the equation $C = 2000 \cdot 1.08^n$ where C is the tuition cost and n is the number of years since 2001. What is the annual percentage of tuition increase?

(MCC9-12.F.BF.2)

31) What is the 10th term of the geometric sequence 2, -6, 18, ...?

32) Three years ago, the tuition at a university was $3000. The following year the tuition was $3300 and last year the tuition was $3630. If the tuition has continued to grow in the same manner, what is the tuition this year?

(MCC9-12.F.BF.2, MCC9-12.F.LE.2)

33) Gena starts an exercise program by running half a mile on Saturday morning. Each week, she increases the distance she runs by a quarter mile. Is this pattern arithmetic? If so, find the common difference and the first six terms of the sequence.

(MCC9-12.S.ID.1, MCC9--12.S.ID.2, MCC9-12.S.ID.3)

34) The amounts of snow(in inches) that fell during the last 8 winters in one city are given. Use the data to make a box and whisker plot.

25, 17, 14, 27, 20, 11, 29, 32

Find the mean absolute deviation.

35) 115, 112, 125, 116, 121, 113

(MCC9-12.F.BF.2, MCC9-12. F.LE.2)

36) Find the 30th term of the arithmetic sequence 2.5, 8.5, 14.5, 20.5, ...

(MCC9-12.A.REI.3) Solve each inequality and graph its solution.

37) $-2(5x - 7) \le 84$
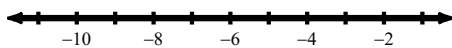
(MCC9-12.F.IF.6) Find the slope of the equation.

38) $x = -1$

    A) $\dfrac{5}{4}$ B) 0

    C) $-\dfrac{5}{4}$ D) Undefined

39) $3x + 5y = 20$

(MCC9-12.A.REI.12)
Sketch the graph of each linear inequality.

40) $x + 2y \le 6$
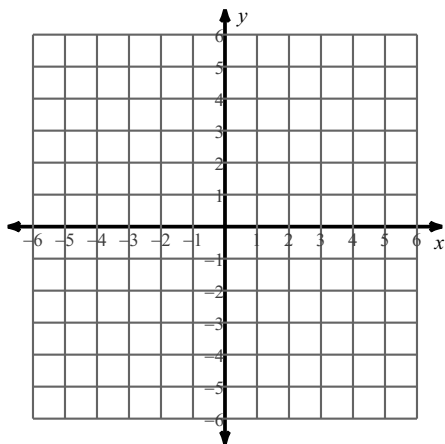
(MCC9-12.A.REI.3) Solve each proportion.

41) $\dfrac{10}{9} = \dfrac{n-9}{2}$

    A) $\{4.7\}$ B) $\{5.3\}$

    C) $\{10\}$ D) $\{11.22\}$

Sketch the graph of each line.

42) $2x + y = 0$

43) $x = 2$

-8-
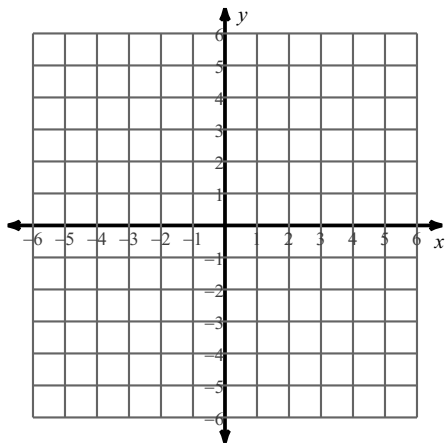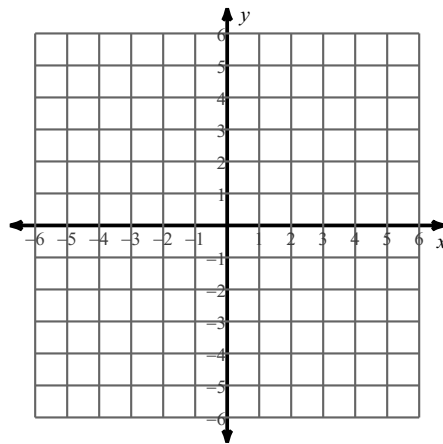
(MCC9-12. G.CO.4, MCC9-12.G.CO.5, MCC9-12.G.CO.2)Find the coordinates of the vertices of each figure after the given transformation.

44) translation: 1 unit left and 3 units down
$L(-2, 2), Z(3, 4), J(0, 1)$

45) rotation 90° counterclockwise about the origin
$B(-4, 0), D(-1, 4), C(1, 1), Q(-3, -3)$

46) reflection across $x = 2$
$P(1, 0), S(4, 4), X(5, 2)$

(MCC9-12. G.CO.4, MCC9-12.G.CO.5, MCC9-12.G.CO.2) Write a rule to describe each transformation.

47) $Z(2, 0), H(1, 4), J(2, 5), I(3, 5)$
to
$Z'(-2, 0), H'(-1, -4), J'(-2, -5), (-3, -5)$

48) $E(-5, 2), I(-4, 4), D(-2, 4), N(-3, 2)$
to
$I'(4, 4), D'(2, 4), N'(3, 2), E'(5, 2)$

(MCC9-12.G.SRT.5, MCC9-12.A.CED.1)State if the two triangles are congruent. If they are, state how you know.

49)

50)

51)
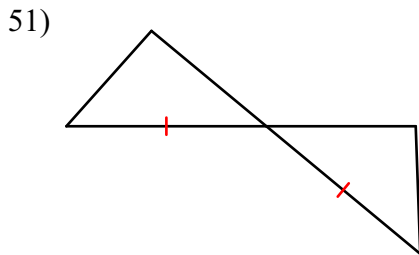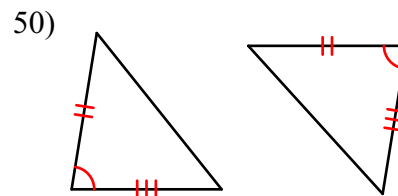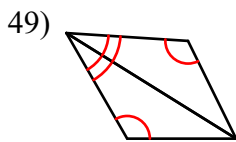
(MCC9-12.G.SRT.3,4,5; MCC9-12. G.MG.1)State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

52)

$\triangle DEF \sim$ _____

53)
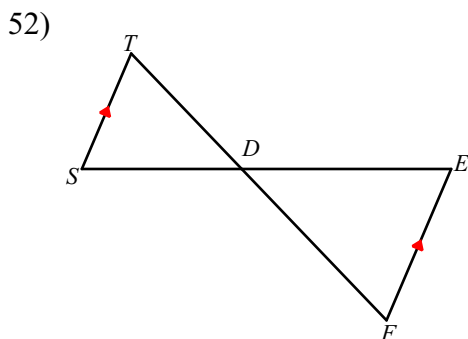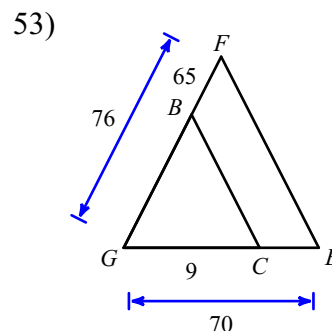
$\triangle GFE \sim$ _____

(MCC9-12.G.SRT.5; MCC9-12.G.CO.9,12; MCC9-12.A.CED.1)Solve for *x*. The triangles in each pair are similar.
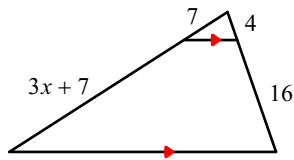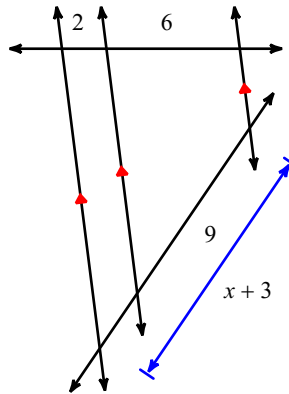
54)
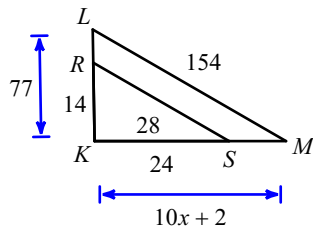
55)
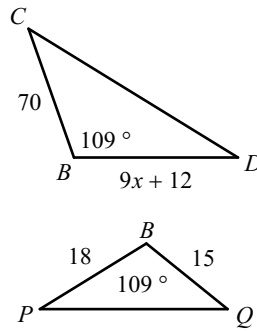
(MCC9-12.G.SRT.5; MCC9-12.G.CO.9,12; MCC9-12.A.CED.1)Solve for *x*.
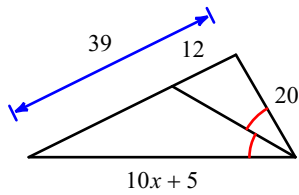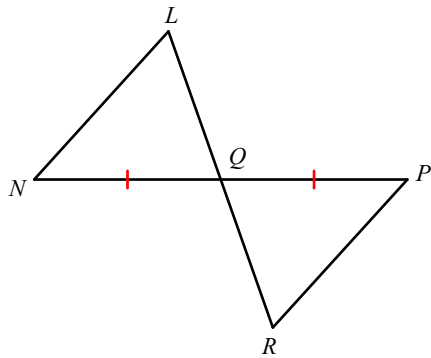
56)

57)

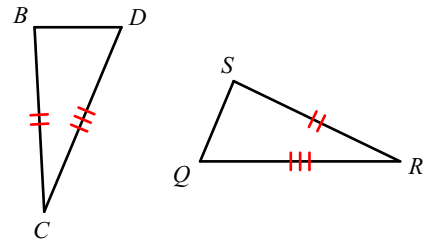**Solve for *x*.**

58)

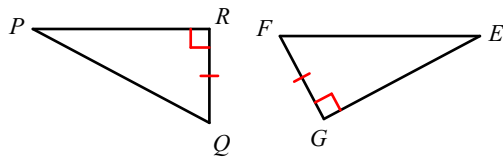**State what additional information is required in order to know that the triangles are congruent for the reason given.**
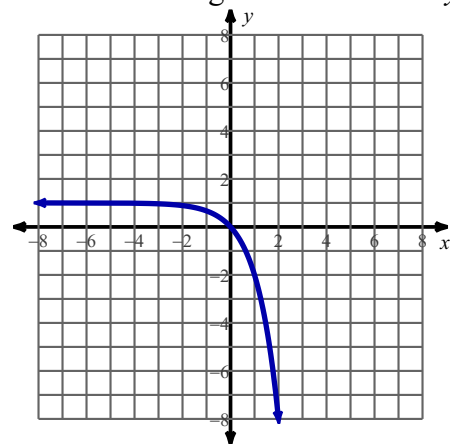
59) AAS

60) SAS

61) HL

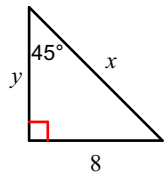62) What is the range of the function $y = -3^x + 1$?

A) $y < 1$ B) $y \geq 1$

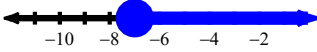C) $y \leq 1$ D) All real numbers

(MGSE9-12.G.SRT.6)

63) An equilateral triangle has a side length of 8 ft. Find the area of the triangle. Leave your answer in simplest radical form.

**(MGSE9-12.G.SRT) Find the missing side lengths. Leave your answers as radicals in simplest form.**

64)

Answers to Spring 2017--Benchmark 1-- Study Guide

1)
2) Van: 10, Bus: 48
3) C
4) D
5) C
6) D
7) D
8) adult ticket: $3, student ticket: $7
9) D
10) B
11) 9 feet
12) C
13) C
14) 8
15) C
16) No, they are parallel lines.
17) $(3, 5)$
18) $\sqrt{29}$
19) D
20) C
21) 3 months, $136
22)
23)
24)
25) C
26) About 136 sea otters
27) $59,847.42
28) 1.76 grams
29) $2000
30) 8%
31) -39,366
32) $3993
33) Yes; d= 1/4 mile; 1/2, 3/4,1, 1 1/4, 1 1/2, 1 3/4
34)
35) M.A.D.= 4
36) 176.5
37) $x \geq -7$:
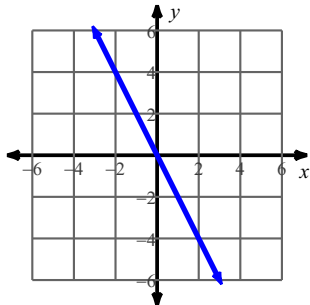

38) D
39) $-\dfrac{3}{5}$
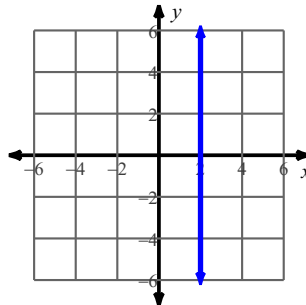40)
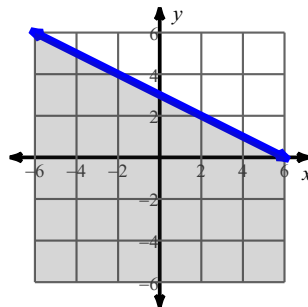
41) D

42)

43)

44) $L'(-3, -1), Z'(2, 1), J'(-1, -2)$

45) $B'(0, -4), D'(-4, -1), C'(-1, 1), (3, -3)$
46) $S'(0, 4), X'(-1, 2), P'(3, 0)$
47) rotation 180° about the origin
48) reflection across the y-axis
49) AAS
50) SAS
51) Not congruent
52) similar; AA similarity; $\triangle DST$
53) not similar
54) 13
55) 8
56) 7
57) 9
58) 4
59) $\angle R \cong \angle L$
60) $\angle C \cong \angle R$
61) $\overline{QP} \cong \overline{FE}$
62) A
63)
64) $x = 8\sqrt{2}, \ y = 8$