Dear Parents:

In our effort to academically prepare your child for the coming school year, the math teachers at Channel View School for Research have prepared a math packet for the summer vacation to help your child reinforce and maintain his/her math skills.

Students are expected to complete all assigned work in the packet. Parents are asked to certify that their child completed the assignment. The math packet will be collected, scored, and reviewed in class. The completed math packet is due to your child's math teacher on the first day of school.

Working together we can insure maximum success for your child. Your cooperation in this matter is appreciated.

We wish you a happy and healthy summer.

Sincerely,

Mrs. Harper-Richardson
Principal

_____

I certify that my child has completed the required 2018 Summer Vacation Math Assignment.

Student's Name _____ Entering Grade _____

Parent's Signature _____ Date _____
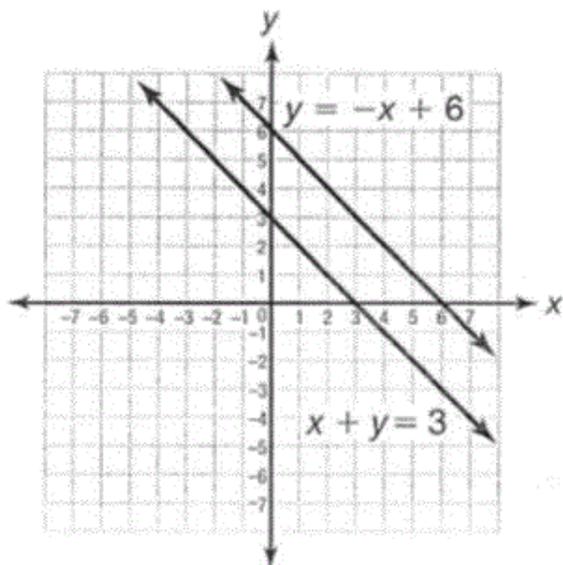
Entering 8/9th Grade

Student _____

Class _____

Date _____

1. Which best describes the solution for the system of linear equations graphed below?

A. (3, 0) only   **C.** no solution

B. (6, 0) only   **D.** infinitely many solutions

2. What is the value of this expression $4^2 \times 4^{-3}$?

A. $\dfrac{1}{4,096}$ **C.** $\dfrac{1}{4}$

B. $\dfrac{1}{1,024}$ **D.** 4

3. What is the value of 2^{-3}?

A. $\dfrac{1}{6}$ **C.** -6

B. $\dfrac{1}{8}$ **D.** -8

4. Solve by elimination:

$$4x - y = 1$$
$$x + 2y = 16$$

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A. (-2, -9)   **C.** (3, 11)

B. (2, 7)   **D.** no solution

5. An industrial machine creates $4^3 \cdot 4^5$ products every year. How many products does the machine create each year?

   A. 4   **C.** 64

   B. 16   **D.** 65,536

6. The population of Canada is approximately 3×10^7. The population of Mexico is approximately 1×10^8. What statement accurately compares the populations of Canada and Mexico?

   A. The population of Canada is more than 30 times greater than the population of Mexico.

   B. The population of Mexico is more than 30 times greater than the population of Canada.

   C. The population of Canada is more than 3 times greater than the population of Mexico.

   D. The population of Mexico is more than 3 times greater than the population of Canada.

7. What value of x makes the equation true?

   $$\frac{3}{4}x + 9 = 3$$

   A. $x = -8$ **C.** $x = 1$

   B. $x = -\frac{1}{2}$ **D.** $x = 16$

8. Find the quotient and express in scientific notation:

   $$\frac{2.89 \times 10^2}{3.4 \times 10^{-2}}$$

A. 0.85×10^0　　　　　　　　　　**C.** 8.5×10^3

B. 0.85×10^4　　　　　　　　　　**D.** 8.5×10^5

9. How many solutions does the pair of equations have?

$4x + 2y = 60$

$12x + 6y = 180$

A. 0　　　　　　　　　　　　　　**C.** 2

B. 1　　　　　　　　　　　　　　**D.** infinitely many

10. Solve for x.

$16x - 3(4x + 5) = 2x + 9$

A. –3　　　　　　　　　　　　　　**C.** 2

B. $\frac{1}{2}$　　　　　　　　　　　　　　**D.** 12

11. Which has the same solution as $2(x + 4) = -7 - 3x$?

A. $5x = 15$　　　　　　　　　　**C.** $-x = 11$

B. $-5x = 15$　　　　　　　　　**D.** $x = 15$

12. What is half of 2^6 ?

A. 1^3　　　　　　　　　　　　　**C.** 2^3

B. 1^6　　　　　　　　　　　　　**D.** 2^5

13. What is the solution to this equation?

$\frac{3}{8}x + 1 = \frac{9}{4}$

A. $\frac{15}{32}$　　　　　　　　　　　**C.** $3\frac{1}{3}$

B. $1\frac{7}{11}$ **D.** $8\frac{2}{3}$

14. What is the first operation you should use to solve the equation $5x + 4 = 1$?

   A. addition   **C.** multiplication

   B. subtraction   **D.** division

15. A cell phone company offers two different monthly plans. Plan A charges $41 for unlimited cell phone minutes plus $0.10 per text message. Plan B charges $31 for unlimited cell phone minutes plus $0.15 per text message. How many text messages must a customer send in order for the cost of Plan A to be equal to cost of Plan B?
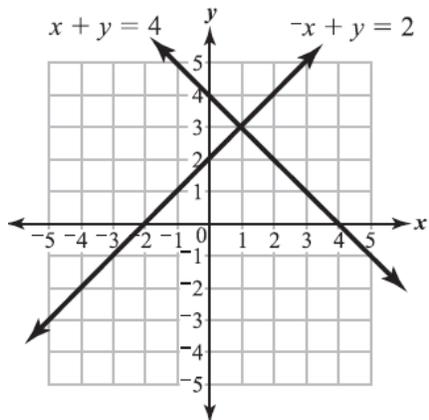
   A. 40   **C.** 284

   B. 200   **D.** 1,420

16. The graphs of two different equations are shown below. What is the solution to the pair of equations?

   A. $x = 1, y = 3$ **C.** $x = 4, y = 4$

   B. $x = 3, y = 1$ **D.** $x = -2, y = 2$

17. What is the value of y in this equation? $4(y - 3) = 48$

   A. 10   **C.** 15

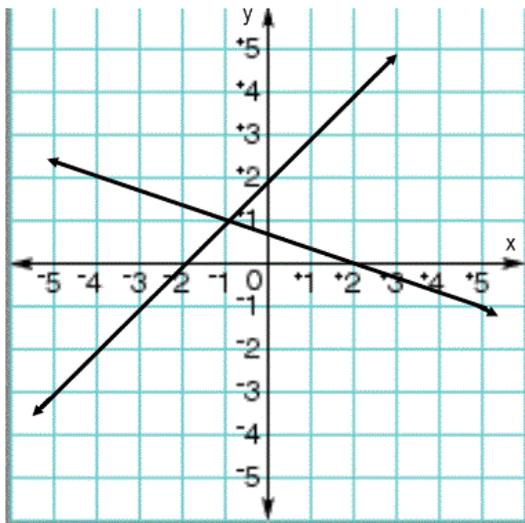   **B.** 12   **D.** 18

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18. The number of birds that Vikram saw on a nature walk is 1 less than $\frac{4}{5}$ the number of birds that Shaya saw. Shaya saw a total of 10 birds. How many birds did Vikram see?

A. 7	**C.** 9
B. 8	**D.** 11

19. How many solutions does the equation $2(x-5) = 2x + 3$ have?

A. 0	**C.** 2
B. 1	**D.** infinitely many

20. Which describes the solution to the system of equations below?

A. (-1,1)	**C.** No solution
B. (-2,0)	**D.** Infinitely many solutions

21. **Mr. Radmanovic's Car**

$$f(x) = -\frac{1}{20}x + 13.6$$

Mrs. Chin's Car

Miles Driven	0	8
Gasoline Remaining (gallons)	13.2	13

A. The *y*-intercept for Mr. Radmanovic's car is 20. The *y*-intercept for Mrs. Chin's car is 13.2. Mr. Radmanovic's car has a larger gasoline tank than Mrs. Chin's car does.

B. The *y*-intercept for Mr. Radmanovic's car is 13.6. The *y*-intercept for Mrs. Chin's car is 13.2. Mr. Radmanovic's car has a larger gasoline tank than Mrs. Chin's car does.

C. The *y*-intercept for Mr. Radmanovic's car is 13.6. The *y*-intercept for Mrs. Chin's car is 13. Mr. Radmanovic's car has a larger gasoline tank than Mrs. Chin's car does.

D. The *y*-intercept for Mr. Radmanovic's car is 20. The *y*-intercept for Mrs. Chin's car is 40. Mrs. Chin's car gets better gas mileage than Mr. Radmanovic's car does.

22. Which equation represents a linear function?

A. $y = 8x^4$

B. $y = -0.05x - 0.001$

C. $y = 2x^2 + 5$

D. $y = \sqrt[3]{x}$

23. Which table represents a function?

A.

x	3	4	5	6	6
y	4	4	5	5	7

B.

x	-2	-1	0	0	0
y	1	2	3	4	5

C.

x	-4	-2	-2	0	2
y	0	2	0	-2	-4

D.

x	-6	-5	-3	0	1
y	3	0	3	0	3

24. Carlita goes jogging, and her GPS collects the data based on how far she runs and how long it takes her to run. What would the rate of change for that data represent?

A. Carlita's distance from home

C. Carlita's distance over time, or speed

B. Carlita's starting point

D. Carlita's time since she left home

25. Miguel currently earns $9 per hour at work. His hourly wage will increase by 70¢ every 5 months for the first year. In a function that models Miguel's average hourly wage over time in months, what is the slope?

A. $0.5 per month

C. $0.70 per month

B. $0.14 per hour

D. $9 per hour

26. Which equation can be written from this table?

x	10	9	6	5
y	4	3	0	-1

A. $x - y = 6$

C. $x + y = 14$

B. $y = 3x$

D. $y = 0x$

27.

Amount Mr. Sanders spent on gas	
Month	Dollars spent on gas
January	$50
February	$67
March	$86
April	$53
May	$50

Mr. Sanders recorded the amount he spent on gas each month to see if it would be cheaper to take the train to work.

*According to the table, what was the rate of change between January and May?

A. $67 per month

C. $53 per month

B. $50 per month

D. $0 per month

28. The graph below shows the total number of pages, y, of a book that Kim read in x number of hours of a certain week.

Pages Read in French
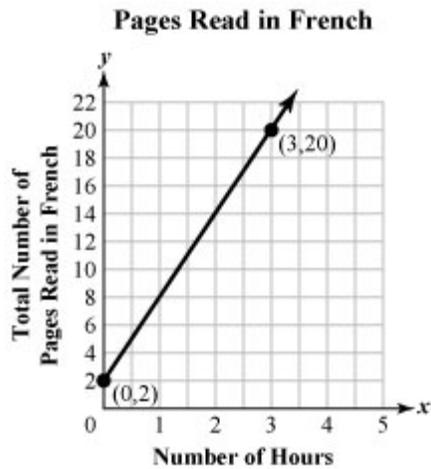
Which statement is correct about the number of pages that Kim read per hour during the week and the number of pages that she had read before the week started?

A. Kim read 2 pages per hour during the week, and she had already read 6 pages before the week started.

C. Kim read 6 pages per hour during the week, and she had already read 2 pages before the week started.

B. Kim read 3 pages per hour during the week, and she had already read 20 pages before the week started.

D. Kim read 20 pages per hour during the week, and she had already read 3 pages before the week started.

29. Which term names the x-values of a function?

A. solution set

C. replacement set

B. range

D. domain

30. Which point could be removed from the set of points below so that the remaining four points represent a function in the coordinate plane?

$(0, 3)$ $(2, 1)$ $(2, 4)$ $(3, 4)$ $(4, {}^-1)$

A. $(0, 3)$

C. $(2, 1)$

B. $(3, 4)$

D. $(4, {}^-1)$

31. Write a rule for this linear function.

x	0	1	2	3
f(x)	2	-3	-8	-13

A. $f(x) = -5x - 2$　　　　　　　　　**C.** $f(x) = -5x + 2$

B. $f(x) = -2x + 5$　　　　　　　　　**D.** $f(x) = 2x + 5$

32. Which set of ordered pairs represents a linear function?

　　A. {(-6, -2), (-3, -1), (0, 1), (1, 3)}　　　C. {(-1,1), (0,2), (1,4), (2,7)}

　　B. {(-8, 0), (-8, -3), (-8, -6), (-8, -9)}　　　D. {(-4, -1), (-1, 1), (2, 3), (8, 7)}

33. Δ*ABC* is reflected across the *y*-axis to obtain Δ*A'B'C'*, as shown below.

Which statement best describes the relationship between the two triangles?

A. They are congruent because *AB = A'B'*,
BC = B'C', and *AC = A'C'*.

C. They are not congruent because *AB = B'C'*,
BC = A'B', and *AC = A'C'*.

B. They are congruent because *AB = B'C'*,
BC = A'B', and *AC = A'C'*.

D. They are not congruent because *AB = A'B'*,
BC = B'C', and *AC = A'C'*.

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34. The distance across a pond cannot be directly measured. A land surveyor takes some other measurements and uses them to find d, the distance across the pond.

30 m

40 m

d
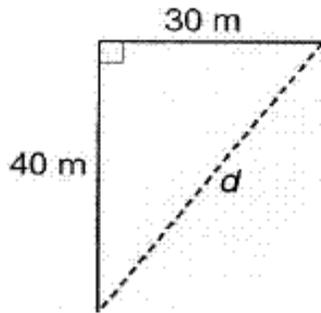
What is the distance across the pond?

A. 70 meters

C. 35 meters

B. 50 meters

D. 10 meters

35. Ryan needs to identify a right triangle. When joined at the vertices, which set of squares below can be used to form a right triangle?
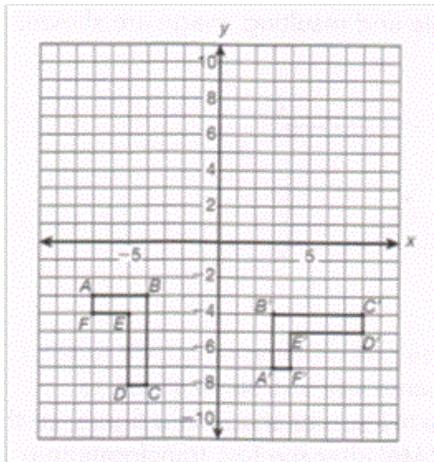
A.

$A = 52u^2$

$A = 16u^2$

$A = 36u^2$

C.

$A = 144u^2$

$A = 36u^2$

$A = 100u^2$

B.

$A = 81u^2$

$A = 49u^2$

$A = 25u^2$

D.

$A = 35u^2$

$A = 12u^2$

$A = 25u^2$

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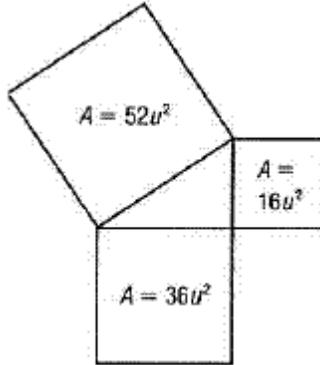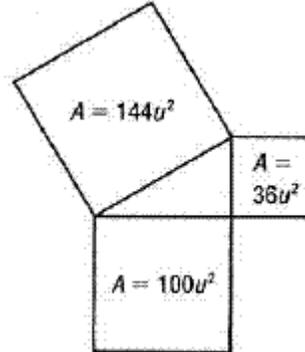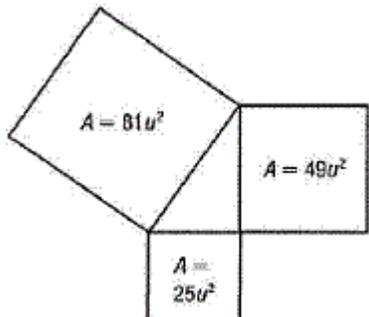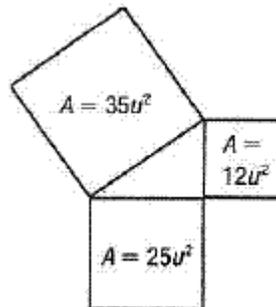
36. Magda drew a figure on a coordinate plane and transformed it as shown below.

Which of the following best describes Magda's transformation?

A. She rotated the figure 90° counterclockwise about the origin.

B. She reflected the figure over the *y*-axis.

C. She translated the figure seven units to the right and one unit down.

D. She rotated the figure 180° about the origin.

37. The figure *ABCDE* was transformed to obtain figure *A'B'C'D'E'*, as shown below.
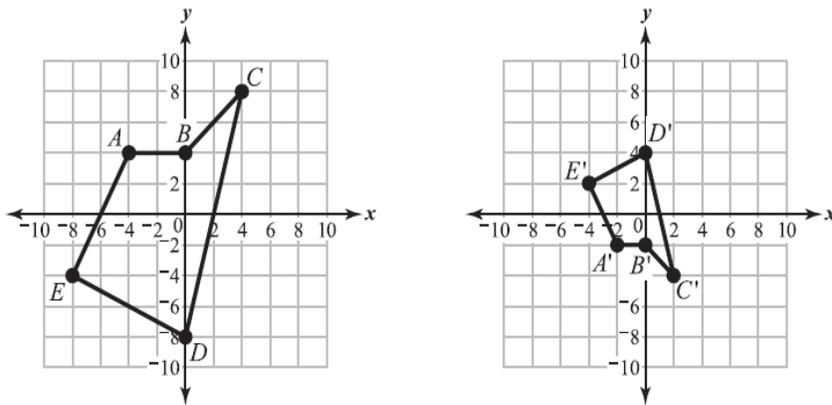
Which transformation was used to obtain figure *A'B'C'D'E'* from figure *ABCDE* ?

A. a dilation by a scale factor of $\frac{1}{4}$ followed by a rotation about the origin

B. a dilation by a scale factor of $\frac{1}{2}$ followed by a rotation about the origin

C. a dilation by a scale factor of $\frac{1}{4}$ followed by a reflection across the *x*-axis

D. a dilation by a scale factor of $\frac{1}{2}$ followed by a reflection across the *x*-axis

38. Jenna has 20 discs. The figure below shows the dimensions of each disc.

6 cm

0.7 cm

$V = \pi r^2 h$
Use 3.14 for π
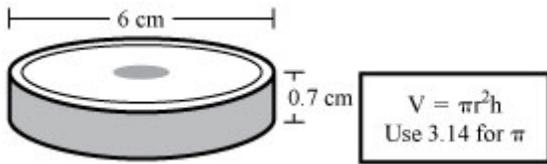
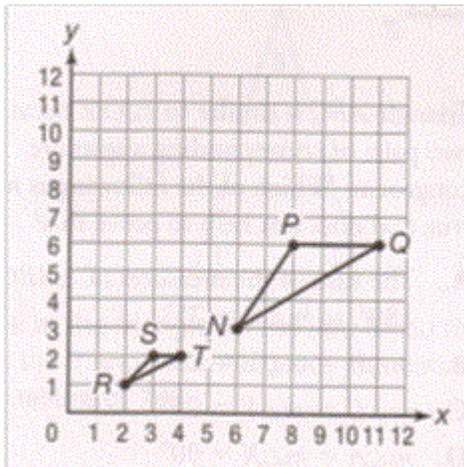Jenna plans to make a cylindrical container to store all the discs in a single column, stacked one on top of theother. What is the smallest volume, to the nearest hundredth, of the container that Jenna should make?

A. 126.00 cubic centimeters

C. 395.64 cubic centimeters

B. 131.88 cubic centimeters

D. 1,582.56 cubic centimeters

39. Triangle *RST* is the result of a dilation of triangle *NPQ* with the center of dilation at the origin and a scale factor of $\dfrac{1}{3}$.

Which proportion must be correct?

A. $\dfrac{NP}{RS} = \dfrac{PQ}{RT}$

C. $\dfrac{NP}{RT} = \dfrac{PQ}{ST}$

B. $\dfrac{NP}{RS} = \dfrac{PQ}{ST}$

D. $\dfrac{NP}{RT} = \dfrac{NQ}{RS}$

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40. What is the length, in meters, of the ramp, $\overline{AC}$, below?
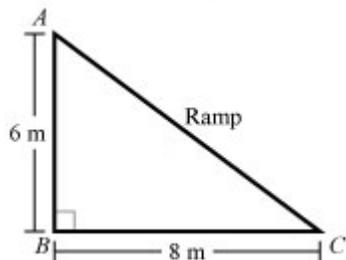
A. 10 meters
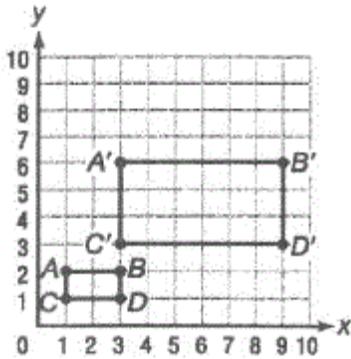
C. 20 meters

B. 14 meters

D. 28 meters

41.

Lines x and y are parallel. If m<5 = 110⁰, what is the measure of <4 ?
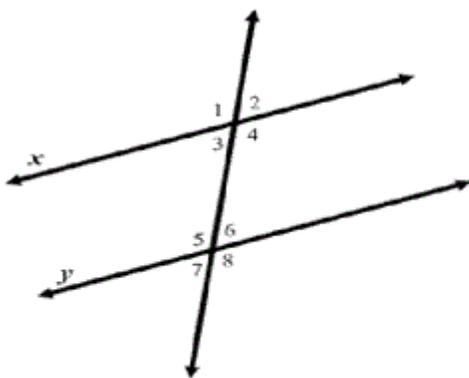
Lines x and y are parallel. If $m\angle 5 = 110^0$, what is the measure of $\angle 4$?

A. 110^0

C. 150^0

B. 70^0

D. 80^0

42. Rectangle $A'B'C'D'$ is the image of rectangle $ABCD$ after a dilation. The center of dilation is the origin. What is the scale factor of the dilation?


A. $\dfrac{1}{3}$

B. $\dfrac{2}{3}$

C. 2

D. 3

43. Rectangle $ABCD$ is shown in the coordinate plane. The shaded rectangle is the image that results when rectangle $ABCD$ undergoes which dilation?
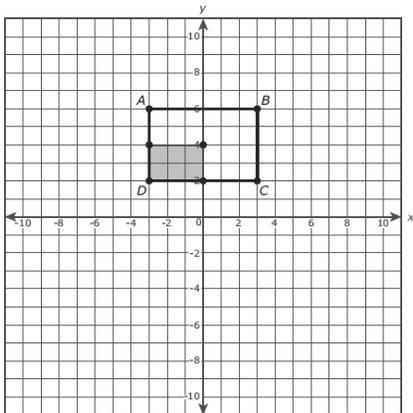
A. dilation centered at point D with a scale factor of 2

B. dilation centered at point D with a scale factor of 0.5

C. dilation centered at point $(0, 4)$ with a scale factor of 0.5

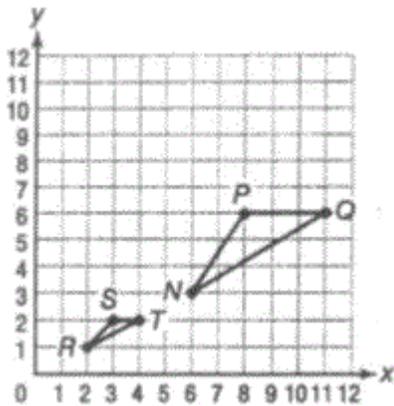**D.** dilation centered at point D with a scale factor of 0.25

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44. What is the value of x in $\triangle ABC$ below?
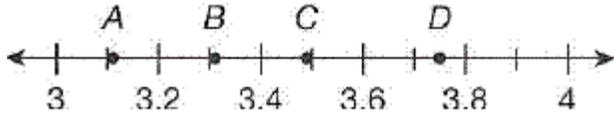

A. 10

C. 32

B. 17
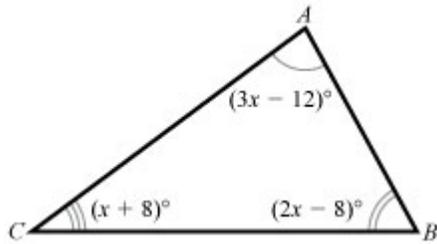
D. 62

45.

Triangle RST is the result of a dilation of triangle NPQ with the center of dilation at the origin and a scale factor of $\frac{1}{3}$.

Which proportion must be correct?

A. $\dfrac{NP}{RS} = \dfrac{PQ}{RT}$

C. $\dfrac{NP}{RT} = \dfrac{PQ}{ST}$

B. $\dfrac{NP}{RS} = \dfrac{PQ}{ST}$

D. $\dfrac{NP}{RT} = \dfrac{NQ}{RS}$

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46. Which point on the number line below best represents $\sqrt{11}$?

A. point A

B. point B

C. point C

D. point D

47. Which is the best estimate of the value of $3\sqrt{8}$?

A. 2.4

B. 6.3

C. 7.9

D. 8.4

48. Which is closest to the value of $5\sqrt{15}$?

A. 19.5

B. 21.0

C. 8.8

D. 4.5

49. A gymnast is $4\frac{5}{12}$ feet tall. Which decimal is equivalent to $4\frac{5}{12}$?

A. 4.416

B. $4.41\overline{6}$

C. 4.512

D. $4.51\overline{2}$

50. The metal composition of a penny is 97.5% zinc and only 2.5% copper. How would 2.5% be written as a decimal?

A. 2.500

B. 2.05

C. 0.25

D. 0.025

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