

Name: _____

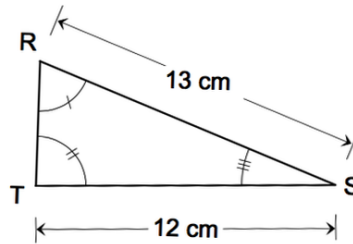
Date: _____

Final Exam Review - 19

Sample Final 01

PART A

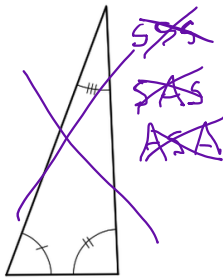
1. Consider triangle RST shown at right.



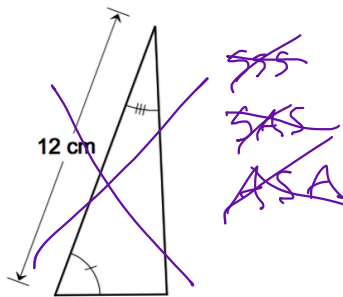
Which of the following triangles is definitely congruent to triangle RST?

definitely congruent to

A)

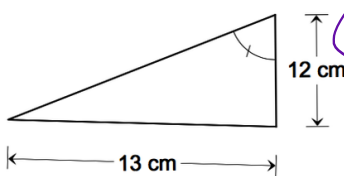


C)

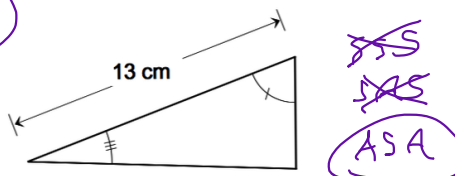


B)

~~SSS~~
~~SAS~~
~~ASA~~



D)



2. What is the mean deviation of the following distribution:

{ 24 , 24 , 36 , 36 , 40 , 48 , 48 , 48 }

8

= 38

A) 0

B) 3.5

C) 4.75

D) 8

$$24 - 38 = -14 \rightarrow 14$$

$$24 - 38 = -14 \rightarrow 14$$

$$36 - 38 = -2 \rightarrow 2$$

$$36 - 38 = -2 \rightarrow 2$$

$$40 - 38 = 2 \rightarrow 2$$

$$48 - 38 = 10 \rightarrow 10$$

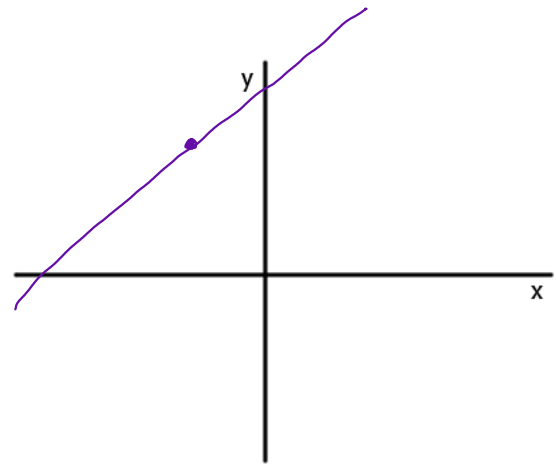
$$48 - 38 = 10 \rightarrow 10$$

$$48 - 38 = 10 \rightarrow 10$$

$$\frac{14 + 14 + 2 + 2 + 2 + 10 + 10 + 10}{8}$$

8

3. Point P $(-7, 50)$ is on a line in the Cartesian plane.
The slope of the line is greater than 0.

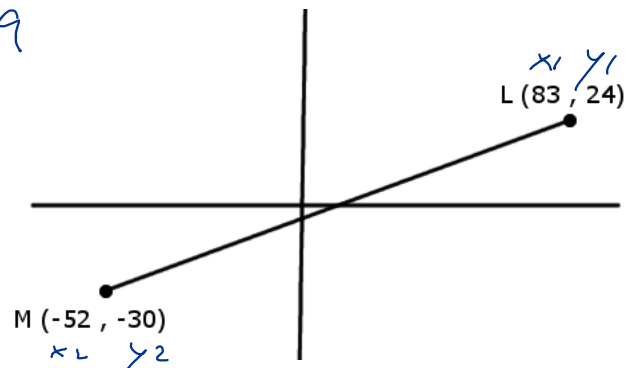


Which of the following statements is true?

- A) The x-intercept is **positive** and the y-intercept is **positive**
 B) The x-intercept is **positive** and the y-intercept is **negative**
 C) The x-intercept is **negative** and the y-intercept is **positive**
 D) The x-intercept is **negative** and the y-intercept is **negative**

4. Point P divides line LM into a ratio of 4:5,
starting from point L.
What are the coordinates of point P?

$$\frac{4}{9}$$



- A) $(56, 13.2)$
 B) $(-25, -19.2)$
 C) $(8, -6)$
 D) $(23, 0)$

$$x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)$$

$$83 + \frac{4}{9}(-52 - 83), 24 + \frac{4}{9}(-30 - 24)$$

$$83 + \frac{4}{9}(-135), 24 + \frac{4}{9}(-54)$$

$$83 + 60, 24 - 24$$

$$23, 0$$

5. Consider the following system of equations.

Eq. 1) $16.5x - 2y - 64 = 0$

$$\begin{array}{r} -16.5x \qquad -16.5x \\ -2y - 64 = -16.5x \\ \quad +64 \qquad +64 \\ \hline -2y = -16.5x + 64 \\ \frac{-2y}{-2} = \frac{-16.5x}{-2} + \frac{64}{-2} \\ \hline y = 8.25x - 32 \end{array}$$

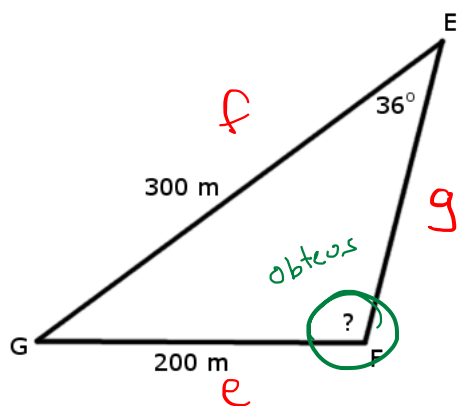
Eq. 2) $4y = 33x + 110$

$$\begin{array}{r} \overline{4} \quad \overline{4} \quad \overline{4} \\ 4y = 33x + 110 \\ \hline y = 8.25x + 27.5 \end{array}$$

Which of the following statements is true?

- A) The system of equations has 0 solutions *same slope*
 B) The system of equations has 1 solutions *d. ff slope*
 C) The system of equations has 2 solutions *never*
 D) The system of equations has infinite solutions *same exact*

6. Consider obtuse-angle triangle GFE represented below



$$\frac{e}{\sin E} = \frac{f}{\sin F} = \frac{g}{\sin G}$$

$$\frac{200}{\sin 36} = \frac{300}{\sin F} = \frac{g}{\sin G}$$

$$\frac{300 (\sin 36)}{200} = \sin F$$

$$0.86 \dots = \sin F$$

$$61.8 = F$$

To the nearest degree, what is the measure of obtuse angle GFE?

A) 96°

B) 118°

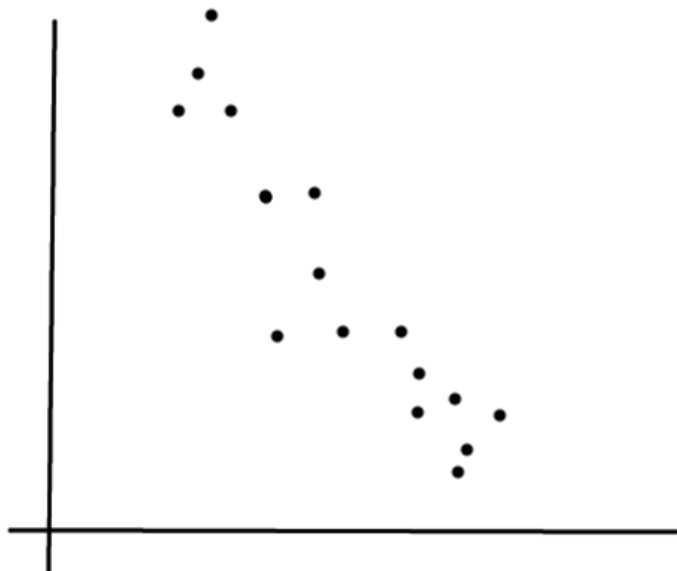
C) 126°

D) 132°

$$180 - 61.8 = 118.2$$

PART B

7. What is the approximate value of the linear correlation coefficient?



Answer: $r =$ _____

8. The function below can be used to find the value of Jimmy's house in relation to the time elapsed, starting from today.

$$y = 200\,000 (1.1)^x$$

where x : time elapsed, starting from today, in years.

y : value of Jimmy's house, in \$

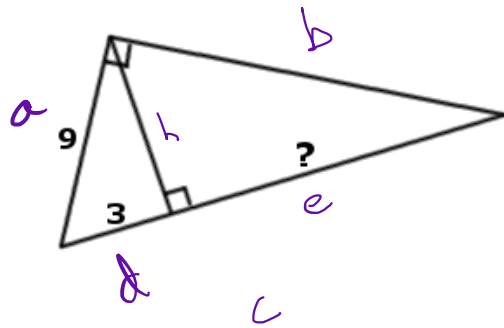
Starting from today, in how much time will Jimmy's be worth \$ 322 102?

$322\,102 = 200\,000(1.1)^x$

x	y
3	292 820
5	322 102

Answer: 5 years

9. Find the value of '?' to the nearest tenth of a unit.



$$\begin{aligned}
 a &= 9 \\
 b &= 3 \\
 c &= 27 \\
 d &= 3 \\
 e &= 24 \\
 h &= 6
 \end{aligned}$$

$$\begin{aligned}
 a^2 &= c \cdot d \\
 9^2 &= c \cdot 3 \\
 \frac{81}{3} &= \frac{c \cdot 3}{3} \\
 27 &= c \\
 c &= d + e \\
 27 &= 3 + e \\
 -3 &-3 \\
 24 &= e
 \end{aligned}$$

$$\begin{aligned}
 a^2 &= c \cdot d \\
 b^2 &= c \cdot e \\
 h^2 &= d \cdot e \\
 a \cdot b &= c \cdot h \\
 c &= d + e \\
 a^2 + b^2 &= c^2 \\
 a^2 &= h^2 + d^2 \\
 b^2 &= h^2 + e^2
 \end{aligned}$$

Answer: 24 units

10. The data listed below represent the marks obtained by 32 students on a mathematics test.

68	51	84	78	64	66	66	48	98	71	75
53	58	64	62	58	82	78	54	90	81	63
70	72	34	73	58	63	72	54	82	73	

What is the percentile rank of a student with a mark of 66%?

34, 48, 51, 53, 54, 54, 58, 58, 58, 62, 63, 63
 64, 64, 66, 66, 68, 70, 71, 72, 72, 73, 73
 75, 78, 78, 81, 82, 82, 84, 90, 98

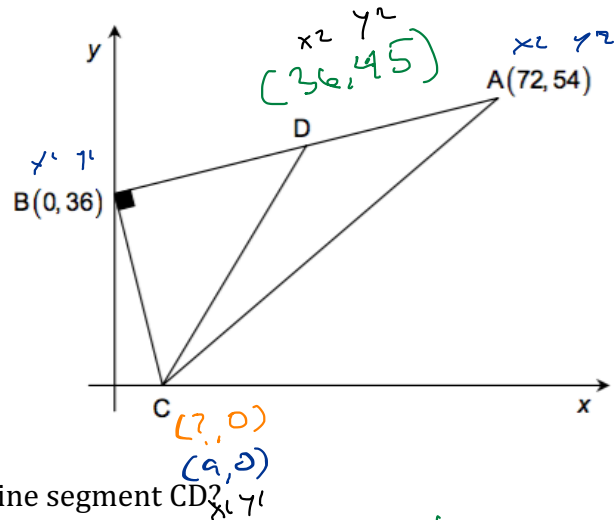
$$\begin{aligned}
 &\frac{\text{lower} + \frac{\text{equal}}{2}}{\text{total}} \times 100 \\
 &= \frac{14 + \frac{2}{2}}{32} \times 100 \\
 &= \frac{15}{32} \times 100 \\
 &= 46.875 \text{ rounded up} \\
 &= 47
 \end{aligned}$$

Answer: The percentile rank is 47.

PART C

11. In the Cartesian plane below:

- Triangle ABC is right-angled at B
- Point C is located on the X-axis
- Point D is on line segment BA
- $m \overline{BD} = m \overline{DA}$



To the nearest tenth, what is the length of line segment CD?

Line AB

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{54 - 36}{72 - 0} = \frac{18}{72} = 0.25$$

$$y = 0.25x + 36$$

Line CD

$$0.25 \rightarrow \frac{-1}{0.25} = -4$$

$$y = -4x + 36$$

$$0 = -4x + 36$$

$$-36 = -4x$$

$$\frac{-36}{-4} = \frac{-4x}{-4}$$

$$9 = x$$

point

$$\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

$$\frac{72 + 0}{2}, \frac{36 + 54}{2}$$

$$\frac{72}{2}, \frac{90}{2}$$

$$36, 45$$

length of CD

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$\sqrt{(36 - 9)^2 + (45 - 0)^2}$$

$$\sqrt{(27)^2 + (45)^2}$$

$$\sqrt{729 + 2025}$$

$$\sqrt{2754}$$

$$52.478$$

$$52.5$$

Answer: To the nearest tenth, the length of segment CD is 52.5 units.

12. Find the measure of angle TNU.

Round your final answer to the nearest tenth of a degree.

① ~~S~~^o/_A ~~C~~^A/_H ~~T~~^o/_A

$$\frac{\tan 20}{1} = \frac{30}{x}$$

$$\frac{30 \cancel{10}}{\tan 20} = x$$

$$82.424$$

② ~~S~~^o/_A ~~C~~^A/_H ~~T~~^o/_A

$$\frac{\cos 32}{1} = \frac{x}{82.424}$$

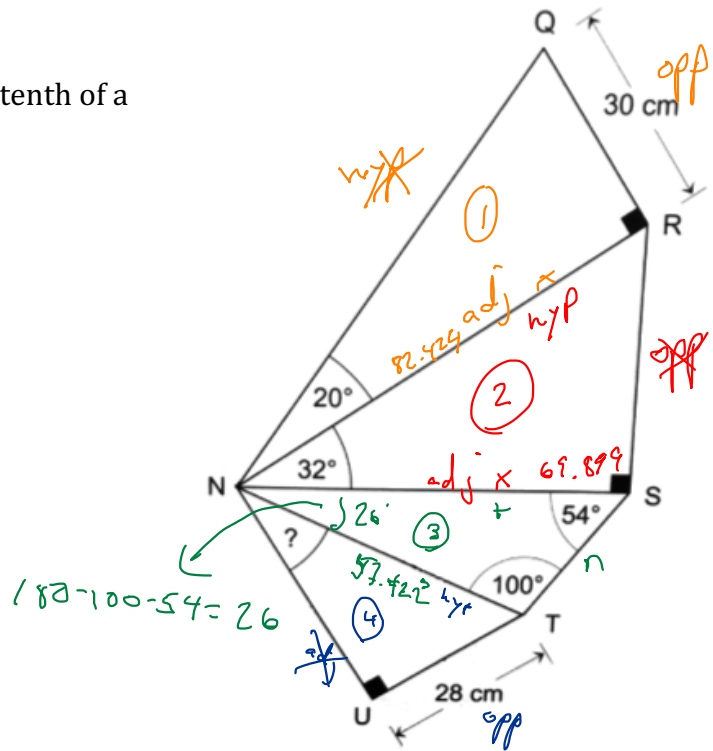
$$69.899$$

③ $\frac{n}{\sin N} = \frac{s}{\sin S} = \frac{t}{\sin T}$

$$\frac{n}{\sin 26} = \frac{69.899}{\sin 54} = \frac{t}{\sin 100}$$

$$\frac{69.899 (\sin 54)}{\sin 100} = t$$

$$57.422 \approx t$$



④ ~~S~~^o/_A ~~C~~^A/_H ~~T~~^o/_A

$$\frac{\sin ?}{1} = \frac{28}{57.422}$$

$$\frac{(1) 28}{57.422} = \sin ?$$

$$0.487... = \sin ?$$

$$29.184$$

$$29.2$$

Answer: To the nearest tenth, the measure of angle TNU is 29.2 degrees.