

3rd Nine Weeks Study Guide

2014

DATA SET : 21, 45, 65, 18, 44, 45, 44,
22, 63, 64, 37

Order the numbers from least to greatest:

18, 21, 22, 37, 44, **44**, 45, 45, 63, 64, 65

1. Mean = 42.54 (Add all data values, then divide by how many you have)

2. Median = 44 (Locate the number in the middle, if there are two numbers in the middle, add them and divide by two.)

3. Mode = 44, 45 (Find the number that occurs the most often)

4. Range $65 - 18 = 47$ (The difference of the largest and smallest numbers)

DATA SET : 21, 45, 65, 18, 44, 45, 44,
22, 63, 64, 37

Order the numbers from least to greatest:

18, 21, (22), 37, 44, (44), 45, 45, (63), 64, 65

1st: Locate the median.

2nd: Find the median of the lower half.

3rd: Find the median of the upper half.

4th: Locate the smallest number.

5th: Locate the largest number.

- Min. 18
- LQ – 22
- Med. – 44
- UQ – 63
- Max - 65

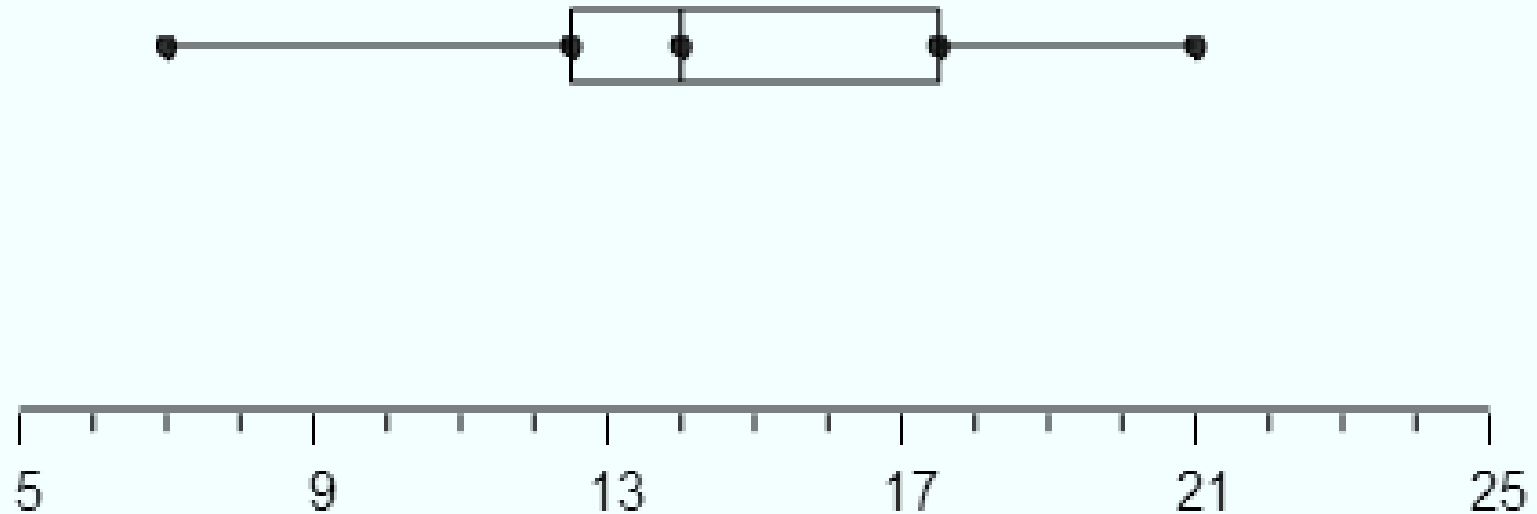
Data Set: 7, 10, 12, 13, 13, 13, 15, 16,
17, 18, 20, 21

6. Find the 5 number summary

- Min. : 7
- LQ : 12.5 ($12 + 13 = 25$; $25/2 = 12.5$)
- Med.: 14 ($13 + 15 = 28$; $28/2 = 14$)
- UQ : 17.5 ($17 + 18 = 35$; $35/2 = 17.5$)
- Max : 21
- IQR : 5 ($17.5 - 12.5 = 5$)

7. Box and Whisker

Min:7 LQ:12.5 Med:14 UQ:17.5 Max:21



Lower 25% quartile is from 7 to 12.5

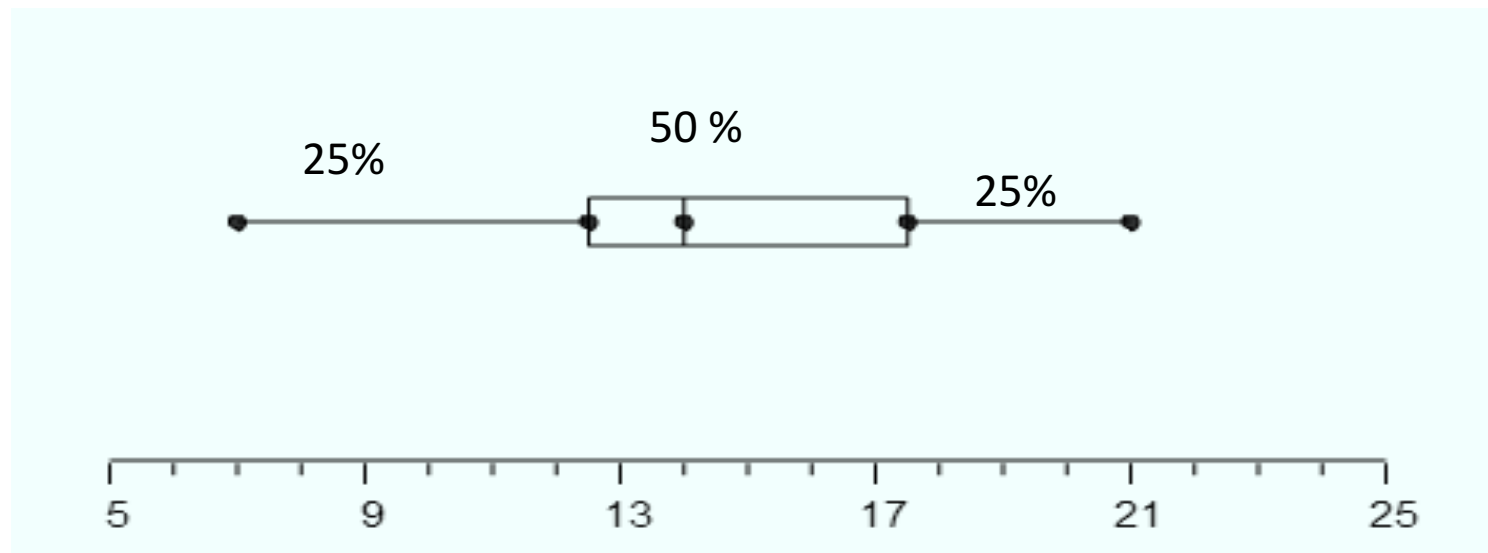
Middle 50% is 12.5 to 17.5

Upper 75% is from 17.5 to 21

8. Interquartile Range is the size of the box. $17.5 - 12.5 = 5$

Box and Whisker

- 9. IQR – tells us how far the data is spread – how much it varies
- 10. Outlier – the number far away from the rest of the data (1.5 half times the size of the box)



Central Tendency

Which measure of center is the best to use?

Mean

Median

Mode

- 11. Median and Mode – not affected by outliers
- 12. Mean – is affected by the outlier
- 13. If there is an outlier – use the median

Sampling

14. Random Sample – draw names out of a hat, pick every 5th person etc.

Convenience Sample – Everyone who comes to the game, the store, those at the online website

15. Biased sample – only surveying on Saturday, only using a certain age group, only those at practice

16. Mean Absolute Deviation

- Aubrey's Game Scores

487, 512, 587, 620

Step 1: find the mean

- Mean = 551.5

Step 2: subtract all data values from the mean.

Step 3: find the mean of the differences from step 2.

- $64.5 + 39.5 + 35.5 + 68.5$

(Divided by) 4

- **MAD = 52**

- Cullen's Game Scores

450, 520, 554, 560, 618

Step 1: find the mean

- Mean = 540.4

Step 2: subtract all data values from the mean.

Step 3: find the mean of the differences from step 2.

- $90.4 + 20.4 + 13.6 + 19.6 + 77.6 / 5 = 44.32$

- **MAD = 44.32**

- Cullen has a lower MAD, so more consistent. Meaning the data is less spread out.

17. Find x

1. Determine the relationship of the given angles.

They are alternate interior angles.

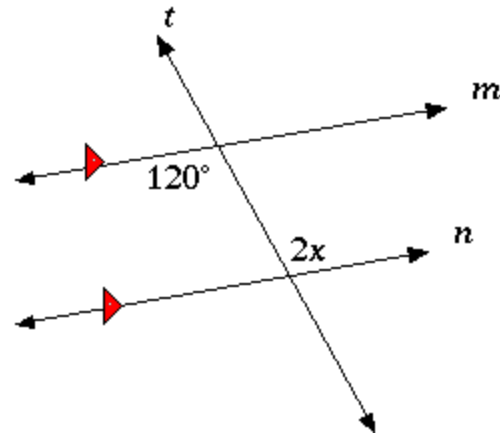
2. Use the relationship to write an equation.

Alternate interior angles are congruent,
so $2x = 120$

3. Solve for x.

$$\frac{2x}{2} = \frac{120}{2}$$

$$x = 60$$



18. Angle Relationships

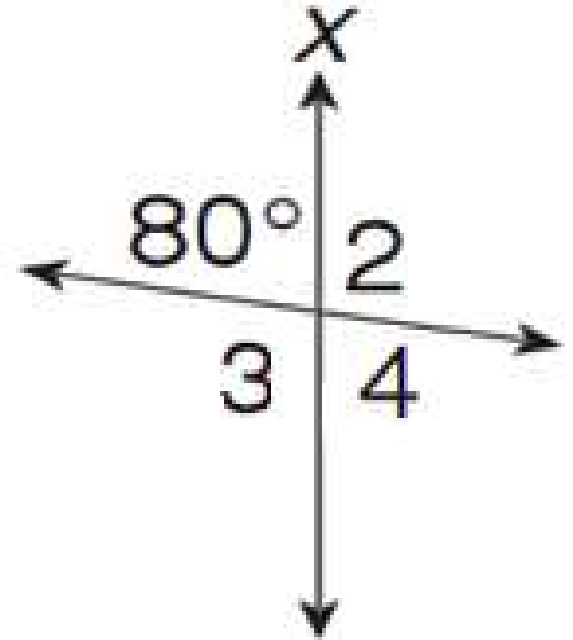
- Label the missing angles

1st determine the relationship. 2nd use the relationship to find the missing angles.

Angle 2 and the given measure 80 are supplementary, so angle 2 is $180 - 80 = 100$.

Angle 3 is vertical to angle 2, so they are congruent, so angle 3 = 100.

The given angle 80 is vertical to angle 4, so they are congruent, so angle 4 = 80.



19. Which angles are vertical?

Vertical angles-across from each other, sharing a vertex.

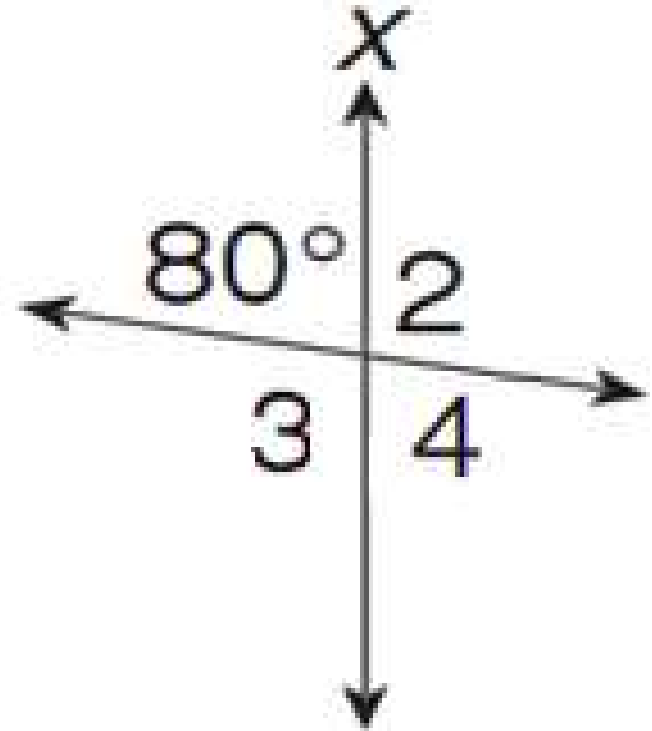
Angles 2 and 3

20. Which angles are adjacent?

Adjacent angles-beside each other, sharing a side and a vertex.

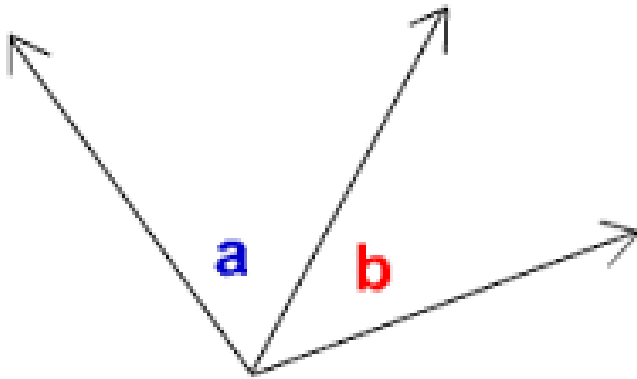
Angles 2 and 4;

Angles 3 and 4

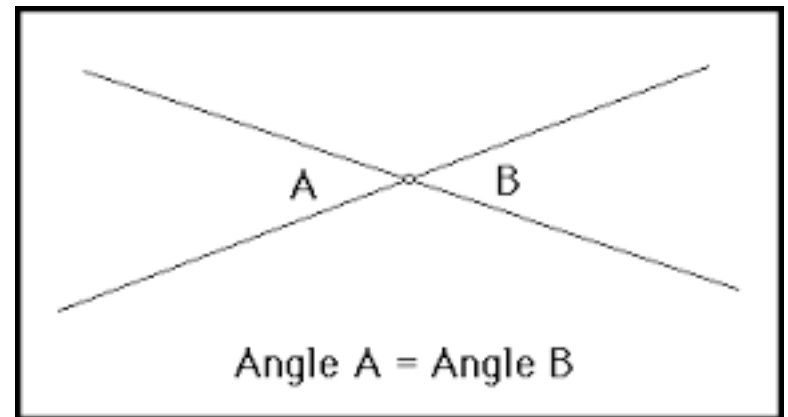


21. Define adjacent and vertical angles.

Adjacent - **Adjacent** angles-beside each other, sharing a side and a vertex.



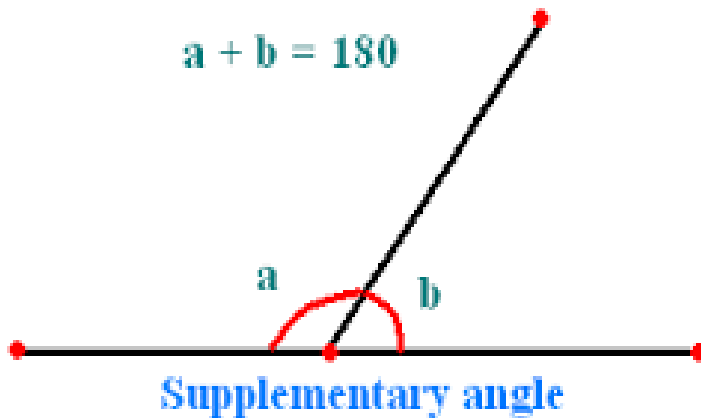
Vertical - **Vertical angles**-across from each other, sharing a vertex.



Supplementary and Complementary

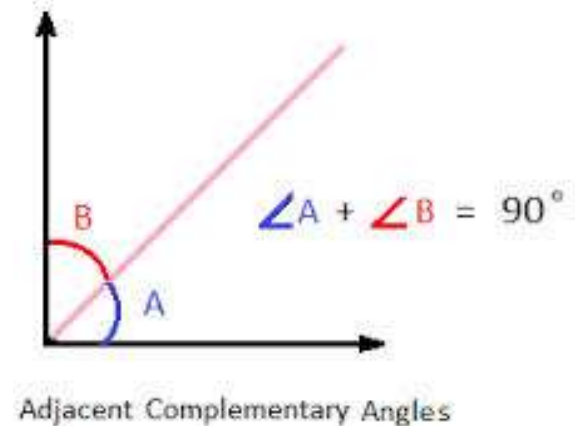
22. Angles 3 and 4 are supplementary, what does that mean?

Supplementary angles – angles whose sum is 180°



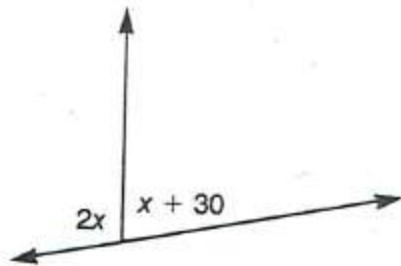
23. If two angles are complementary, what does that mean?

Complementary angles – the sum of two angles equals 90°



Angle Relationships

24.



Angle 3 and 4 are supplementary. They are = 180 degrees.

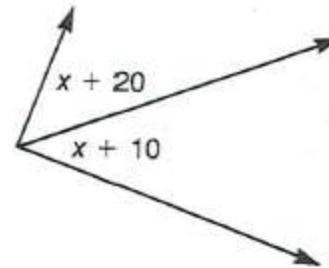
$$2x + x + 30 = 180$$

$$3x + 30 = 180$$

$$3x = 150$$

$$X = 50$$

25.



Complementary = 90 degrees

$$X + 20 + x + 10 = 90$$

$$2x + 30 = 90$$

$$2x = 60$$

$$X = 30$$

Triangles Theorems

26. When creating a triangle , the **SUM** of the measures of the two shortest segments must be **> (more)** than the measure of the 3rd segment.
- The 3 angles of a triangle = 180 degrees
 - The longest side of a triangle is opposite the largest angle, and vise versa. The shortest side is opposite the smallest angle, and vise versa.

27. Determine whether the line segments can form a triangle.

a) 3m, 5m, 10m

$$3 + 5 = 8$$

$8 \not> 10$ – False, it will not make a triangle

b) 3.5m, 7m, 10m

$$3.5 + 7 = 10.5$$

$10.5 > 10$ – True, it will make a triangle

c) 5ft, 5 ft, 10ft

$$5 + 5 = 10$$

$10 \not> 10$ – False, it will not make a triangle

28. Determine the range for the third side of the triangle.

a) 22ft, 18ft

Min: $22 - 18 = 4$

Max: $22 + 18 = 40$

$$4 < x < 40$$

b) 8in, 10in

Min: $10 - 8 = 2$

Max: $10 + 8 = 18$

$$2 < x < 18$$

c) 20cm, 14cm

$20 - 14 = 6$

$20 + 14 = 34$

$$6 < x < 34$$

Finding % of a number

29. 75% of 230

$$\begin{array}{rcl} \underline{\%} & = & \underline{\text{is}} \\ 100 & & \text{of} \\ \underline{75} & = & \underline{x} \\ 100 & 230 & \text{cross multiply} \end{array}$$

$$100x = 17250 \quad \text{Solve for } x$$

$$X = 172.5$$

30. What percent of 300 is 18

$$\begin{array}{rcl} \underline{\%} & = & \underline{\text{is}} \\ 100 & & \text{of} \\ \underline{x} & = & \underline{18} \\ 100 & 300 & \text{cross multiply} \end{array}$$

$$300x = 1800 \quad \text{Solve for } x$$

$$x = 6$$

Percent of a number

31. 45% of 52

$$\frac{\%}{100} = \frac{\text{is}}{\text{of}}$$

$$\frac{45}{100} = \frac{x}{52} \quad \text{cross multiply}$$

$$100x = 2340 \quad \text{Solve for } x$$

$$x = 23.4$$

32. 4% of 17

$$\frac{\%}{100} = \frac{\text{is}}{\text{of}}$$

$$\frac{4}{100} = \frac{x}{17} \quad \text{cross multiply}$$

$$100x = 68 \quad \text{Solve for } x$$

$$x = 0.68$$

33. Finding % of change

Step 1: Subtract the numbers (find the difference)

Step 2: Use formula: $\frac{\text{difference}}{\text{original}}$ (The original will be red in the examples)

A. 60 is increased to 78

$$78 - 60 = 18; 18 / 60 = 0.3 = 30\%$$

B. 96 is decreased to 42

$$96 - 42 = 54; 54 / 96 = .56 = 56\%$$

C. 123 is decreased to 15

$$123 - 15 = 108; 108 / 123 = .878 = 87.8\%$$

Interest = principal x rate x time

$$I = prt$$

34. Find the Interest if the principal invested was \$600 for at 6% for 7 years.

Plug the information into the formula and solve. Change percent to decimal (2 places left)

$$I = 600 \times .06 \times 7 = \mathbf{\$252}$$

35. Find out amount of interest that will be paid if the price of a TV was \$1200, the rate was 24% for 4 years.

Plug the information into the formula and solve. Change percent to decimal (2 places left)

$$I = 1200 \times .24 \times 4 = \mathbf{\$1152}$$

$$\text{Interest} = \text{principal} \times \text{rate} \times \text{time}$$
$$I = prt$$

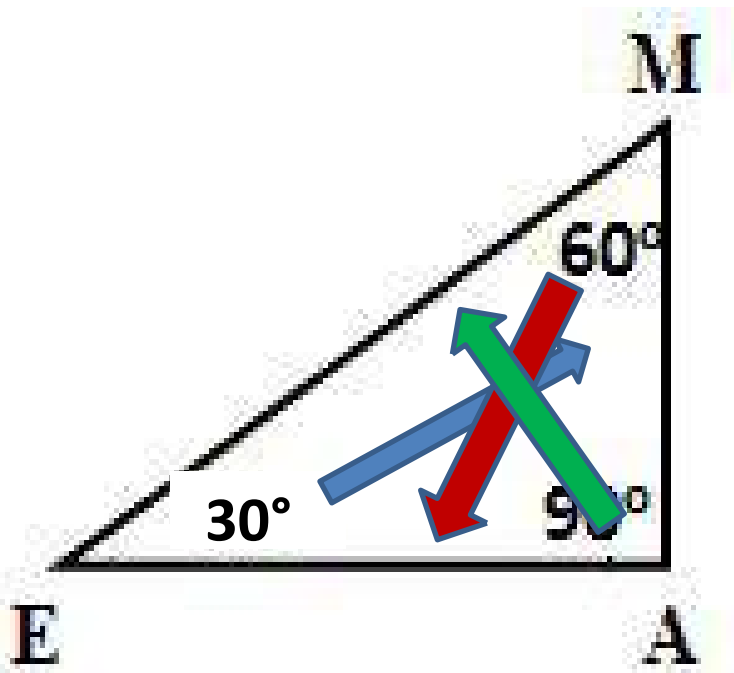
- After 4 years, an account earns 12% interest has earned \$960. How much money was initially deposited?

$$960 = \text{principal} (.12)(4) \quad (\text{Plug information in})$$

$$960 = P(.48) \quad (\text{Solve for P, divide both sides by .48})$$

$$\mathbf{\$2000 = \text{principal}}$$

37. Arrange the sides from least to greatest.



1st you must find the measure of the 3rd angle using Triangle Sum Theorem.
-All interior angles add up to 180°

$$60 + 90 + x = 180$$

$$150 + x = 180$$

$$x = 30^\circ$$

Triangle Inequality Theorem states that the largest angle is opposite the longest side.

Smallest Side – MA

Middle Side – EA

Longest Side - EM

For 5 bonus points

Write the following statement and hand it to Mrs. Van Pelt after checking the last problem.

I have completed the study guide and I

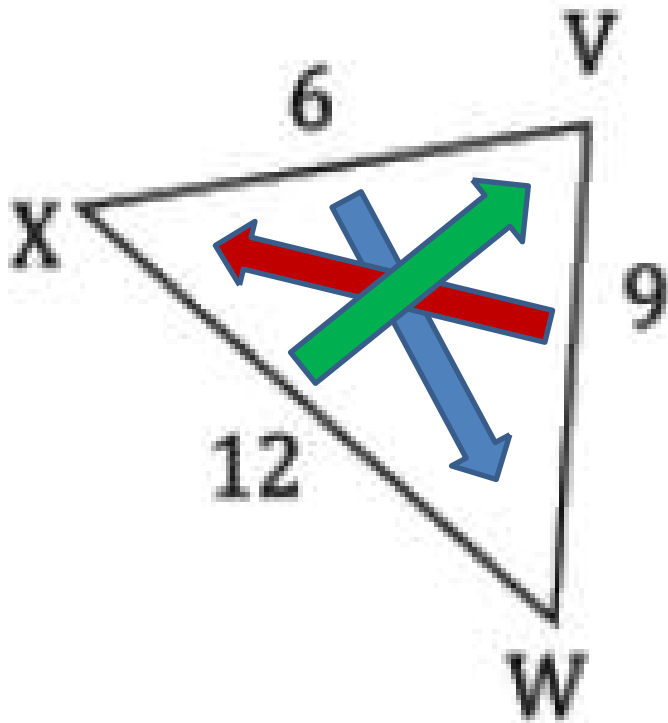
- a) still do not understand number/s _____
- b) Still have trouble with _____.
- c) Completely understand everything and I am ready for the 9 weeks exam.

sign your name.

Now check the last slide for problem number 38.

38. Arrange the angles from **least to greatest**.

Triangle Inequality Theorem states that the largest angle will be opposite the longest side.



Smallest Angle – W

Middle Angle – X

Largest Angle – V