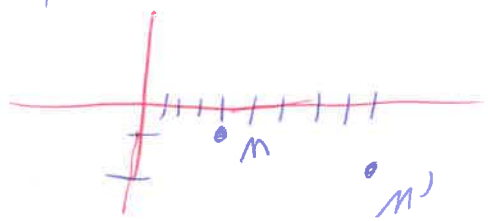
Midterm Review

1. Point $M(4,-1)$ is translated to $M'(9,-2)$. Which translation rule describes this movement?

x x
4 + □ = 9
5

x y
−1 + □ = −2
−1

x y
(x + 5, y − 1)



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2. Find the values of X, ID, and MD. List your answers in order from least to greatest with commas separating your answers. * (3 Points)

Given I is the midpoint of $\overline{MD}$, find x, ID, and MD.

5(2)+1 = 11 9(2)−7 = 11

M **5x + 1** I **9x - 7** D

$5x + 1 = 9x - 7$
$-5x \quad -5x$

$1 = 4x - 7$
$+7 \quad +7$

$\frac{8}{4} = \frac{4x}{4}$

$2 = x$

$x = 2$

$ID = 11$

$MD = 11 + 11 = 22$

3.)

Given: A P B (with initial point *A*)

1. $AP : PB = 3 : 2$	● TRUE	○ FALSE
2. $AP : AB = 2 : 5$	○ TRUE	● FALSE
3. $PB : AB = 2 : 5$	● TRUE	○ FALSE
4. $BP : PA = 2 : 3$	● TRUE	○ FALSE
5. $AB : AP = 5 : 3$	● TRUE	○ FALSE

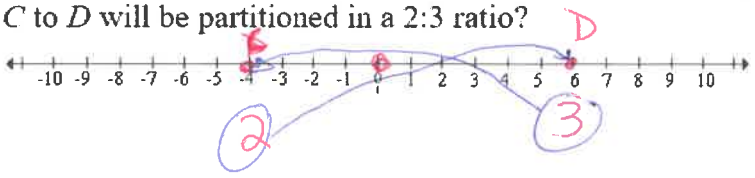
4.)

A line segment partitioned by a ratio of 3:4 can be thought of as having 7 congruent sections.

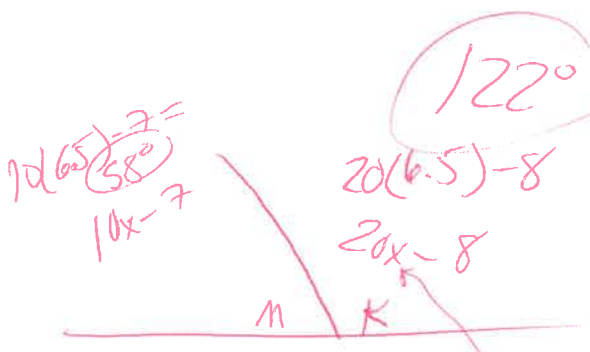
(3+4=7)

5.)

On a number line, point *C* is located at -4 and point *D* is located at 6. At what point must *P* be located so that the directed line segment from *C* to *D* will be partitioned in a 2:3 ratio?



$$\frac{(3)(-4) + (2)(6)}{\text{TOTAL PARTS}} \qquad \frac{-12 + 12}{2+3} = \frac{0}{5} = 0$$



√ 122+58=180√

6.)

<M and < K are a linear pair. If $m\angle M = 10x - 7$ and $m\angle K = 20x - 8$, find x. Find the measure of <K.

$10x - 7 + 20x - 8 = 180$

$30x - 15 = 180$

$+15 \quad +15$

$\frac{30x}{30} = \frac{195}{30}$

$x = 6.5$

$20(6.5) - 8$

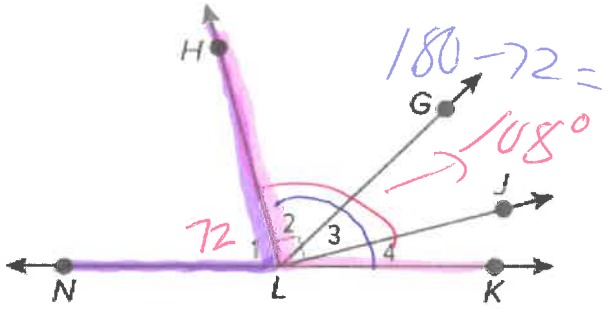
$122°$

7.) <NLH = 72 degrees

What is the measure of <KLH? 108°

What kind of angles are they?

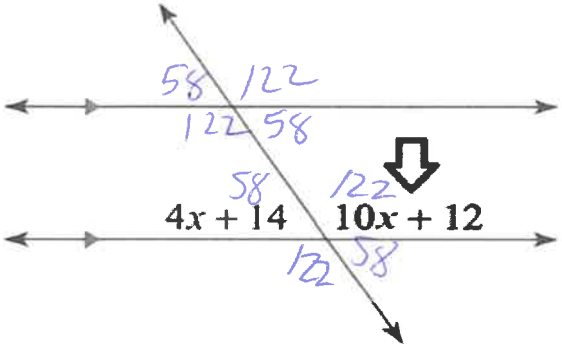
linear pair
adjacent
Supplementary
180°



180-72=

108°

8.)



Find the measures of all the angles.

What is the value of X?

$4x+14+10x+12=180$

$14x+26=180$

$-26 \quad -26$

$\frac{14x}{14} = \frac{154}{14} = 11$

What is the measure of the angle with the arrow pointing at it?

$10(11)+12 = 122°$

What is the measure of the angle that is marked, but does not have an arrow pointing at it?

$4(11)+14 = 58°$

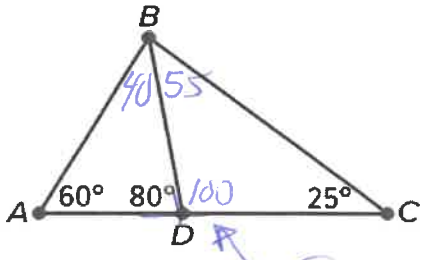
9.)

Find the measure of <ABD $40°$

Find the measure of <BDC $100°$

Find the measure of <DBC $55°$

$180-(60+80) = 40$



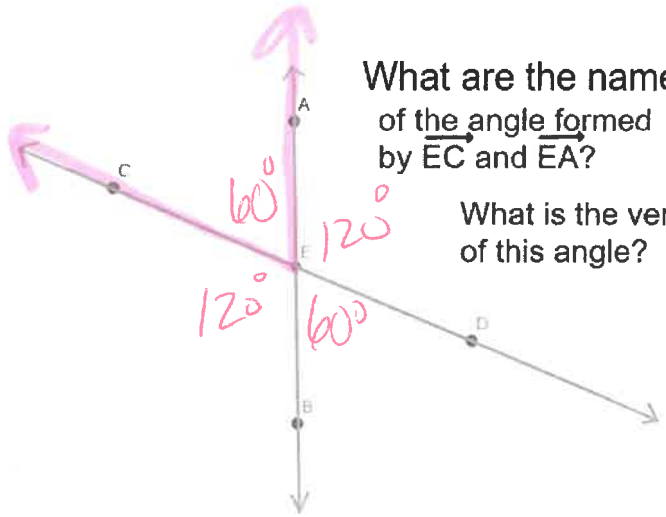
$180-80=100$

$180-(100+25) =$

$180-125 =$

$55°$

10.)



What are the names of the angle formed by $\overrightarrow{EC}$ and $\overrightarrow{EA}$?

∠AEC or ∠CEA

What is the vertex of this angle?

Point E

What kind of angle is it? Obtuse, Acute, Right?

Name a pair of vertical angles. ∠CEA & ∠BED or ∠CEB & ∠AED

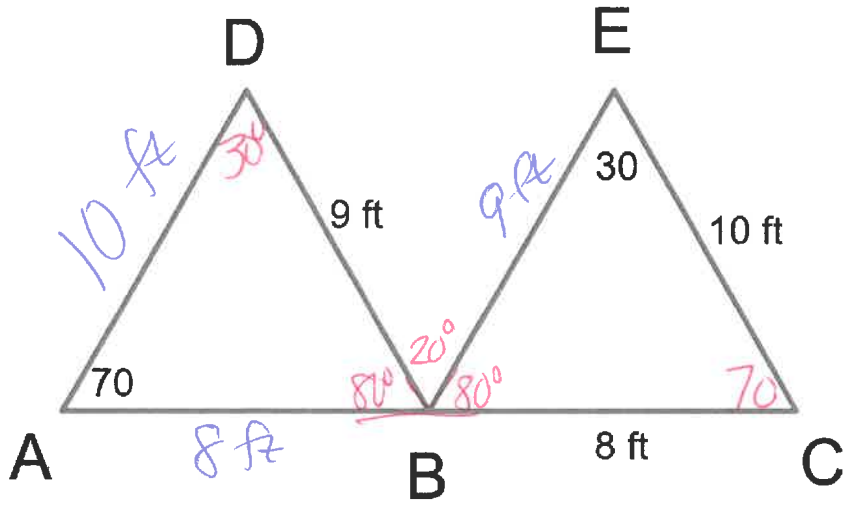
If <CEB = 120 degrees find the remaining angles and justify your answers.

∠AED & ∠CED are vertical ∠'s = 120

∠AED & ∠DEB are a linear pair (180) so 180 − 120 = 60°

∠BED & ∠CEA are vertical angles = 60

11.) Triangle ADB = Triangle CEB



180 − (30+20)
180 − 100 =
80°

180 − (80+80) =
180 − 160 = 20°

Determine the measures of <ADB, <ABD, <EBC, <DBE, <ECB, <DBC, <EBA

30° 80° 80° 20° 70° 100° (20+80) 100° (20+80)

Determine the length of AD, AC, and EB

AD = CE
10 ft

EB = ED
9 ft

AB = CB
8 ft

~~EB~~ =

AC

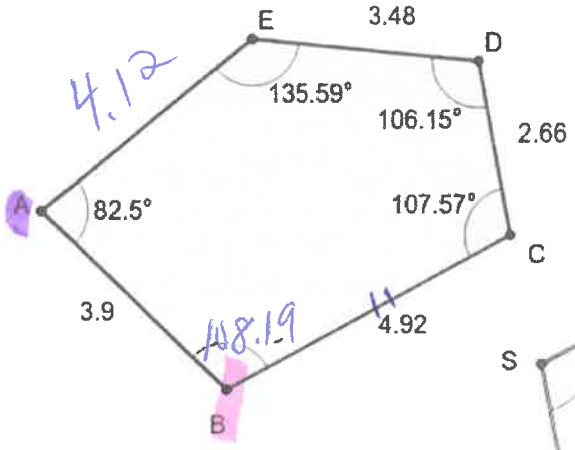
8 ft + 8 ft = 16 ft
AB + BC

12.)

ABCDE = MHWSV

82.5° 108.19

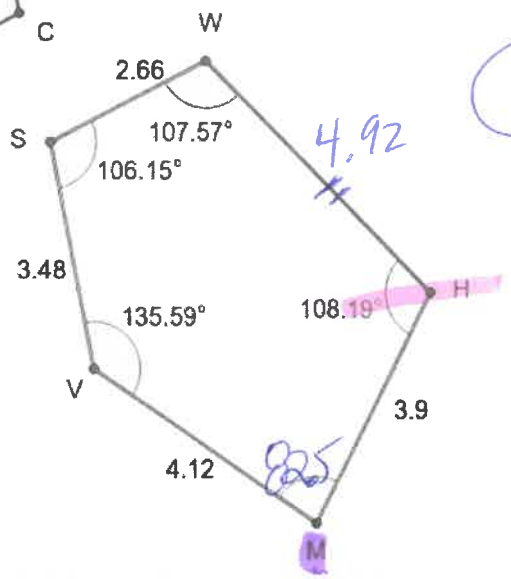
Determine the measure of <M and <B



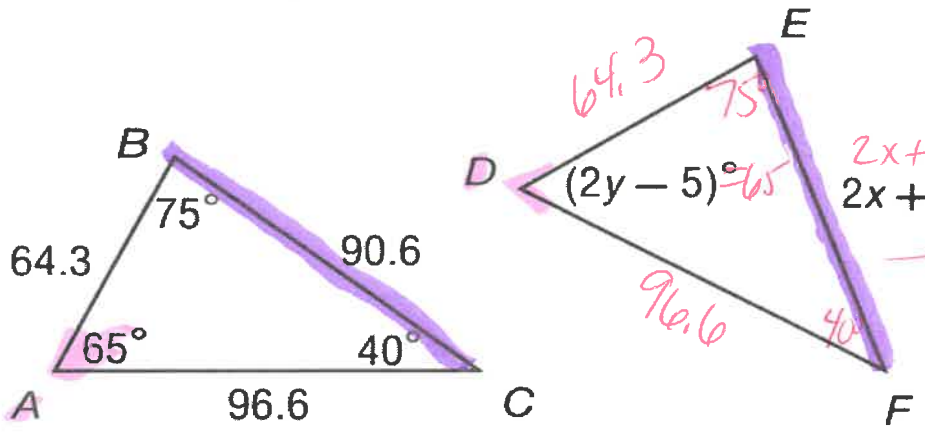
What is the side length of WH and AE?

BC = 4.92

MV = 4.12



13.) In the diagram, $\Delta ABC \cong \Delta DEF$. Find the values of x and y.



$2y - 5 = 65$
$+5 \quad +5$
$\frac{2y}{2} = \frac{70}{2}$
$y = 35$

$2x + 35 = 90.6$
$-35 \quad -35$
$\frac{2x}{2} = \frac{55.6}{2}$
$x = 27.8$

Find the length of side EF: 90.6

Find the lenght of side DE: 64.3

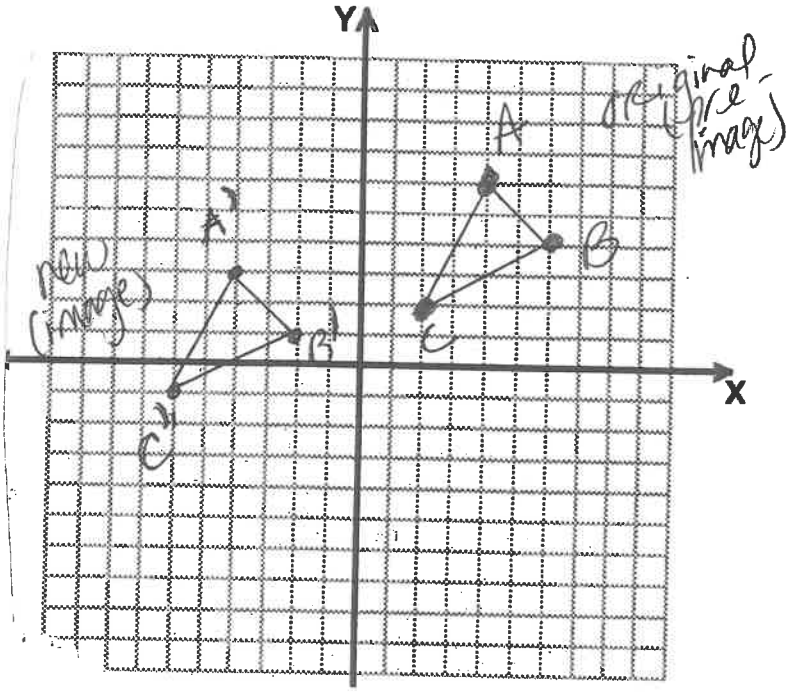
Find the measure of <D: 65°

Find the measure of <F: 40°

14.) What is the transformation that maps ABC on to A'B'C'? — Part A

*Include the rule of the transformation.

What transformation will map ABC back on to itself? — Part B



Part A

$(x-8, y-3)$

(8 left & 3 down

translation

Part B

360° Rotation

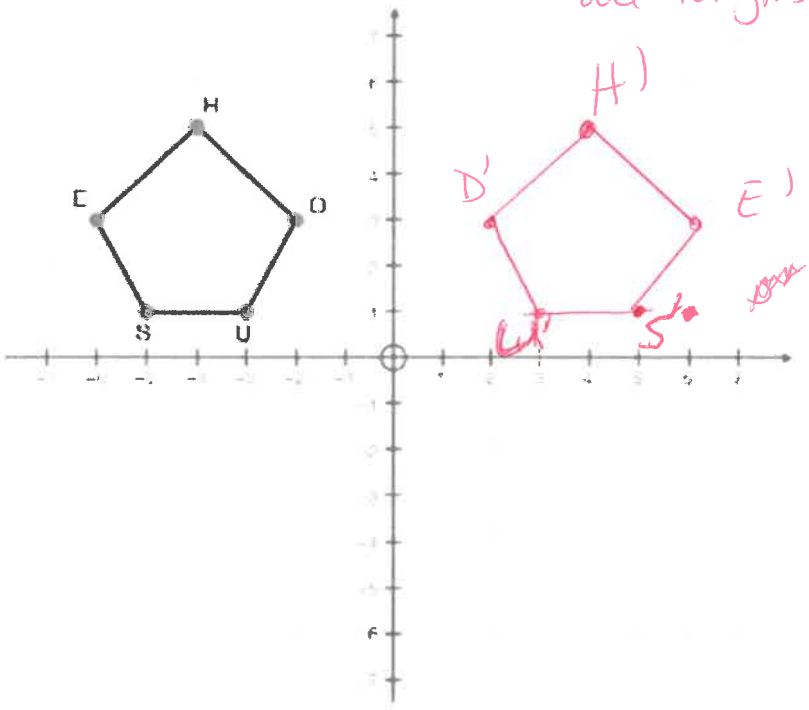
15.) Draw a reflection of Pentagon SUDHE over the y-axis.

Is this transformation rigid motion? yes

What is the length of S'U' after the reflection? 2 units

What do you know about all the lengths of the new image? all lengths stay same

Rigid Motion preserves distance



A(1,2) B(3,-1) C(7,6)

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

$\sqrt{(3-1)^2+(-1-2)^2}$

$2^2+(-3)^2$

$4+9$

$\sqrt{13}$

BC $\sqrt{(7-3)^2+(6--1)^2}$

4^2+7^2

$16+49$

$\sqrt{65}$

AC $\sqrt{(7-1)^2+(6-2)^2}$

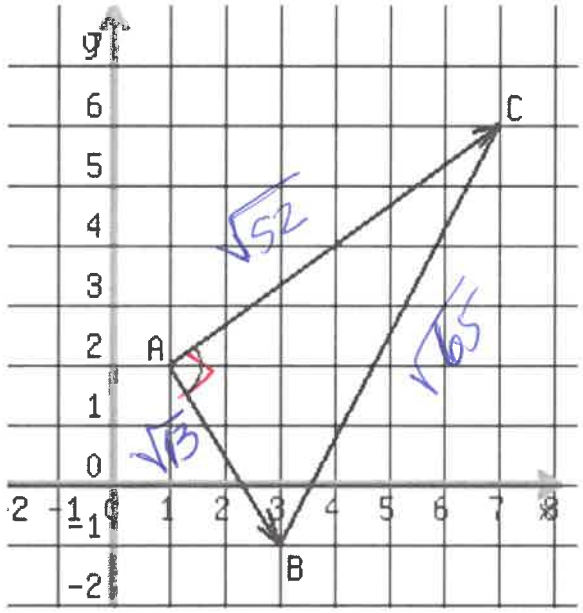
6^2+4^2

$36+16$

$\sqrt{52}$

16.) Is triangle ABC a right triangle?
Justify your answer.

Determine the area of the triangle.
Determine the perimeter of the triangle.



AC slope $= \frac{2}{3}$

AB slope $= -\frac{3}{2}$

perpendicular lines
negative (opposite)
reciprocals
right ∠

Perimeter:

$\sqrt{13}+\sqrt{65}+\sqrt{52} = 18.9$

Area:

$\frac{1}{2}bh$ $\frac{1}{2}(\sqrt{13})(\sqrt{52}) = 13$ Area

P → Q

17.) Consider the statement: *If the sum of two anlges is 180° then the angles are supplementary.* Determine if it is a True or False statement.

True **A)** Converse: $Q \rightarrow P$ If Angles are supplementary then they equal 180°

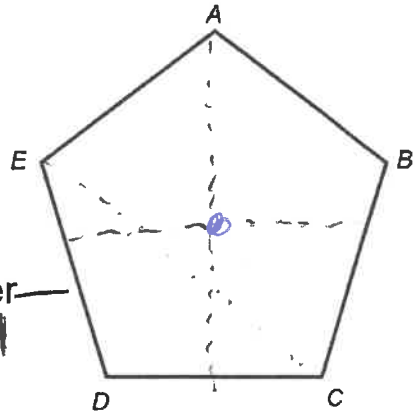
True **B)** Inverse: $\sim P \rightarrow \sim Q$ If 2 angles are NOT 180° then they are NOT Supp.

True **C)** Contrapositive: $\sim Q \rightarrow \sim P$ If 2 angles are NOT Supp. then they are NOT 180°

18.)

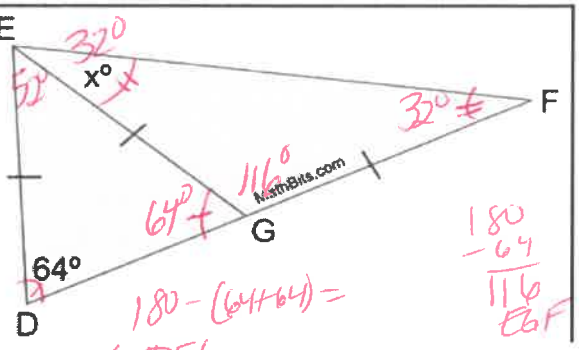
Which transformations would map the pentagon on to itself?

a.) 180 degrees rotation about the center
b.) 360 degrees rotation about the center
c.) reflection of a horizontal line through the center
d.) refleciton of a vertical line through the center
e.) reflection of a diagonal from point E to C



180 - 116 = 64 ÷ 2 = 32

19.) ΔDEG and ΔEGF are isosceles.
$m\angle EDG = 64°$
Find $m\angle GEF$. 32°



180 − (64 + 64) = ∠DEG

180 − 64 = 116 ∠EGF

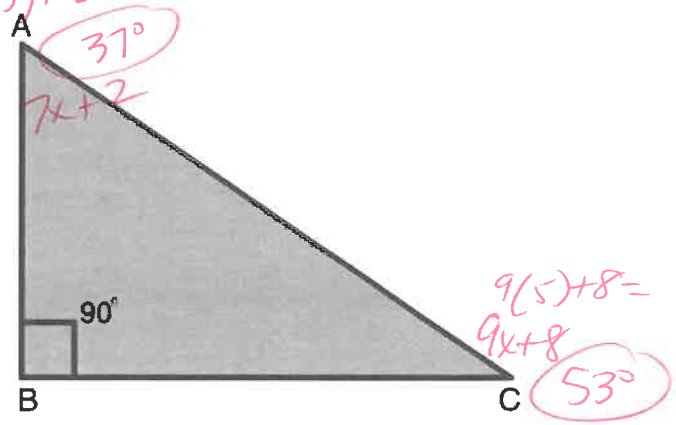
Find <EGF and <GFE and <DGE and <GED

116° 32° 64° 52°

20.)

<BAC measure is 7x+2
and <ACB is 9x+8

Solve for x and find the degrees of both angles.



90 + 7x + 2 + 9x + 8 = 180

16x + 100 = 180
−100 −100

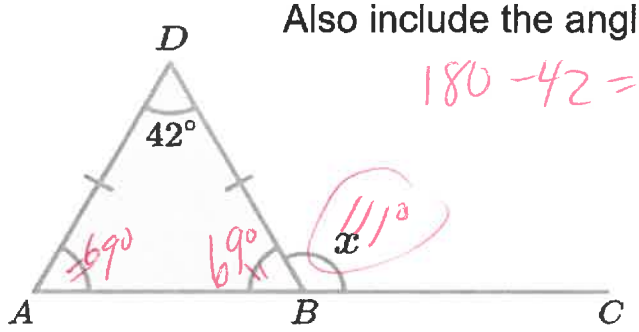
16x = 80
16 16

x = 5

✓ 90 + 53 + 37 = 180 ✓

21.) Determine the size of the exterior angle CBD, labelled x.

Also include the angle degress for <DAB and <DBA first.



69° 69°

$180 - 42 = \frac{138}{2} = 69°$

$69 + 42 = x$

$111 = x$

or $180 - 69 = 111°$

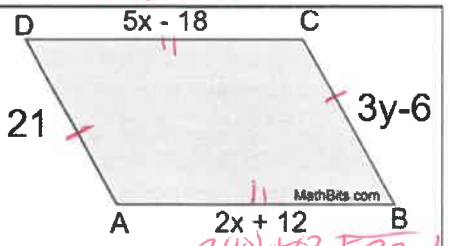
22.)

The sides of parallelogram $ABCD$ are represented as shown.

Solve for x and y.

What is the length of AB?

32



$5(10) - 18 = 32$

$2(10) + 12$

32

$V(3,9) - 6$

$27 - 6 = 21$ ✓

$21 = 3y - 6$

$+6 \quad +6$

$\frac{27}{3} = \frac{3y}{3}$

$9 = y$

$2x + 12 = 5x - 18$

$-2x \quad -2x$

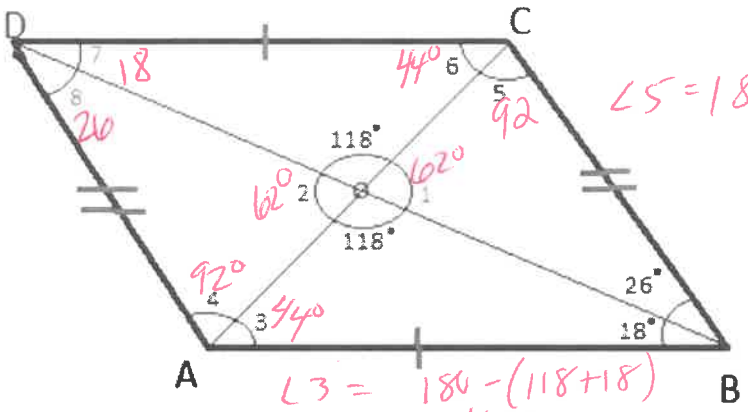
$12 = 3x - 18$

$+18 \quad +18$

$\frac{30}{3} = \frac{3x}{3}$

$x = 10$

23.)



$\angle 1 = 180 - 118$

$\angle 5 = 180 - (62 + 20)$

$\angle 3 = 180 - (118 + 18)$

$44°$

Solve for angles 1-8.

$\angle 3$ & $\angle 6$ are Alternate Interior $\angle$'s so =

BOTH $44°$

$\angle 4$ & $\angle 5$ also Alt. Int. $\angle$'s so =

$92°$

$\angle 7$ ALT INT with $\angle ABD$ so $= 18°$

$\angle 8$ ALT INT with $\angle CBD$ so $= 26°$

Vocab to know:

parallel, transversal, perpendicular,
intersect,horizontal,vertical,diagonal,linear pair of angles,
vertex,vertical angles, supplementary, complementary,
midpoint, triangle sum theorem,
exterior angle theorem, properties of parallelograms,
obtuse/acute/right angles,corresponding, alternate
interior, alternate exterior, consecutive interior,
congruence, area, perimeter
transformations: reflection/rotation/translation and rules -
rigid motion
converse,inverse,contrapositive
isosceles and equilateral triangles
Proofs/Properties