


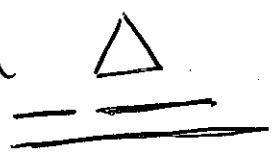
Name: _____

1. Choose true or false [A] False [B] True

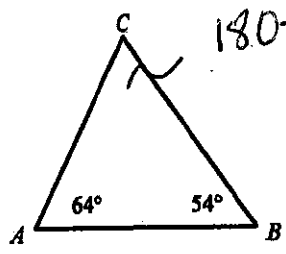
The sum of two sides of a triangle is always greater than the third side.

True, otherwise it won't make a 

2. Choose always, sometimes, never:
A perpendicular bisector of a triangle passes through the midpoint of that side.
[A] Always [B] Sometimes [C] Never



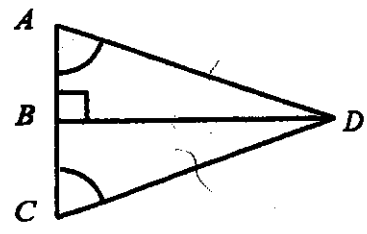
3. Identify the longest side of $\triangle ABC$.



- [A] \overline{BC}
[B] \overline{AB}
[C] \overline{CA}

opposite the largest \angle

4. $\triangle ABD \cong \triangle CBD$. Write HA, LA, LL, or HL as the reason.

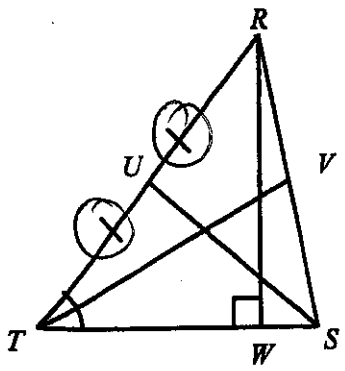


L = leg
A = Angle
H = Hypotenuse

- [A] HA [B] HL [C] LL [D] LA

5. Name an angle bisector for $\triangle RST$.

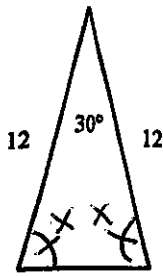
$\triangle RST$



- [A] \overline{RW}
[B] \overline{TV}
[C] \overline{US}

SU bisects RT

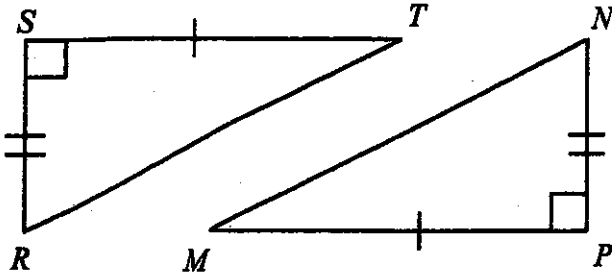
6. What is the measure of each base angle of an isosceles triangle if its vertex angle measures 30 degrees and its 2 congruent sides measure 12 units?



Base angles of isosceles Δ 's are congruent.
 $30^\circ + x^\circ + x^\circ = 180$
 $2x = 150$
 $x = 75$

- [A] 150° [B] 30° [C] 60° [D] 75°

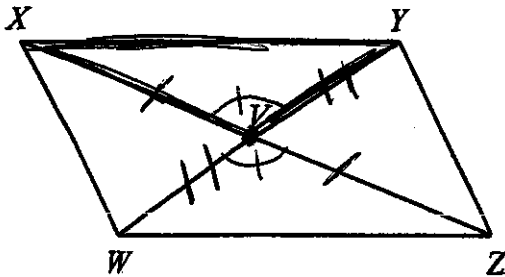
7. Which postulate can be used to prove that $\Delta MPN \cong \Delta TSR$?



SAS
 Side Angle Side
 $\overline{RS} \cong \overline{NP}$, $\angle TSR \cong \angle MPN$,
 $\overline{MP} \cong \overline{TS}$

- [A] SAS [B] SSS
 [C] There is not enough information to prove that the triangles are congruent. [D] ASA

8. Which postulate can be used to prove that $\Delta XVY \cong \Delta ZVW$ if V is the midpoint of \overline{XZ} and \overline{YW} ?



$\angle YVX = \angle WVZ$ Vertical \angle 's
 $\overline{XV} \cong \overline{ZV}$
 $\overline{YV} \cong \overline{WV}$
 SAS

- [A] ASA [B] The triangles cannot be proved to be congruent. [C] SSS [D] SAS

9. In a triangle ABC, $m\angle A = 23$ and $m\angle C = 31$. Find $m\angle B$.

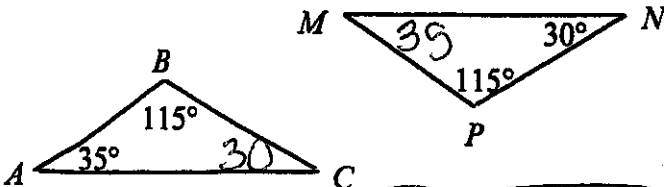
[A] 126

[B] 54

[C] 26

$$\begin{array}{r} 23 \\ + 31 \\ \hline 54 \\ 180 \\ - 54 \\ \hline 126 \end{array}$$

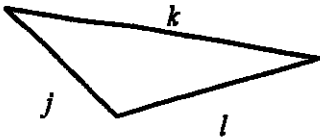
10. Which postulate or theorem can be used to show that the triangles are similar?



- [A] AA Similarity [B] The triangles are not similar [C] SSS Similarity [D] SAS Similarity

Angle Angle Similarity

11. Decide if the triangle is right, acute, or obtuse. If it is right, name the hypotenuse.



one angle $\angle 90^\circ$

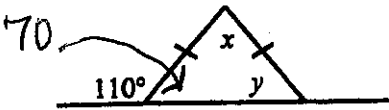
[A] acute

[B] right, k

[C] obtuse

[D] right, j

12. Find the values of x and y .



$$\begin{array}{r} 70 \\ + 70 \\ + x \\ \hline 180 \end{array}$$

$\angle y = 70^\circ$ Base \angle 's of isosceles are cong.

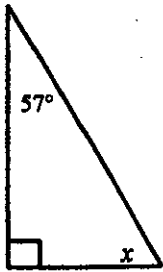
[A] $x = 70^\circ$; $y = 50^\circ$

[C] $x = 70^\circ$; $y = 110^\circ$

[B] $x = 40^\circ$; $y = 70^\circ$

[D] $x = 40^\circ$; $y = 110^\circ$

13. Find the value of x .



$$\begin{aligned} 57 + 90 + x &= 180 \\ 147 + x &= 80 \end{aligned}$$

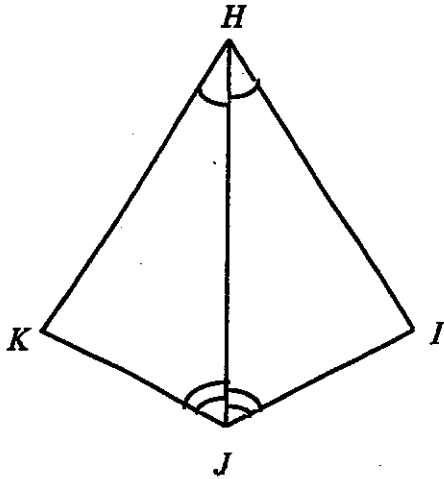
[A] 33°

[B] 147°

[C] 66°

[D] 123°

14. Which postulate can be used to prove that $\triangle KHJ \cong \triangle IHJ$?



$$\begin{aligned} \angle KHJ &\cong \angle IHJ \\ \overline{HJ} &\cong \overline{HJ} \\ \angle KJH &\cong \angle IJH \end{aligned}$$

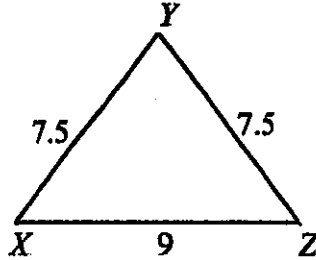
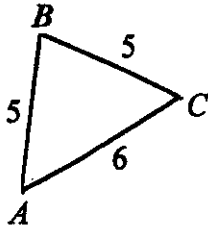
[A] The triangles cannot be proved to be congruent.

[B] SAS

[C] ASA

[D] SSS

15. Which postulate or theorem can be used to show that the triangles below are similar?



$$\frac{2}{3} = \frac{6}{9} = \frac{5}{7.5} = \frac{5}{7.5}$$

Ratios of sides are similar

[A] AA Similarity

[B] SAS Similarity

[C] SSS Similarity

[D] The triangles are not similar.

Geometry Quarter 1 Mid-term Exam, 2010

Multiple Choice

Identify the choice that best completes the statement or answers the question.

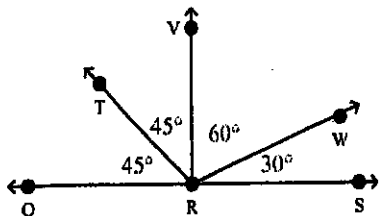


Figure 5-3

Acute means less than 90°

16. Name two acute angles in Figure 5-3 above.

- a. $\angle QRT, \angle VRW$ ✓
- b. $\angle QRV, \angle VRS$

- c. $\angle QRT, \angle VRS$
- d. $\angle QRV, \angle TRW$

17. Name a pair of complementary angles in Figure 5-3 above.

- a. $\angle QRV, \angle VRS$
- b. $\angle QRT, \angle VRS$

- c. $\angle QRV, \angle VRW$
- d. $\angle VRW, \angle SRW$

Complementary \angle 's add to 90°

Supplementary \angle 's add to 180°

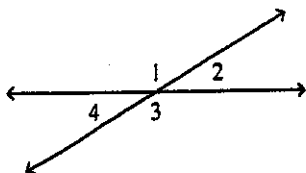


Figure 5-5

(C comes before S, 90 comes before 180)

18. In Figure 5-5 above, $\angle 1$ and $\angle 3$ are vertical angles, and $\angle 2$ and $\angle 4$ are vertical angles.

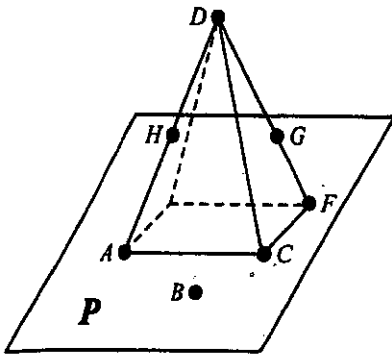
If $m\angle 2 = 30^\circ$, find $m\angle 4$.

- a. 120°
- b. 150°

- c. 30°
- d. 60°

Vertical angles are congruent.

19. Are points A, C, D and F coplanar? Explain.



- a. Yes; they all lie on plane P .
- b. No; they are not on the same line.
- c. Yes; they all lie on the same face of the pyramid.
- d. No; three lie on the same face of the pyramid and the fourth does not.

Refer to Figure 2.

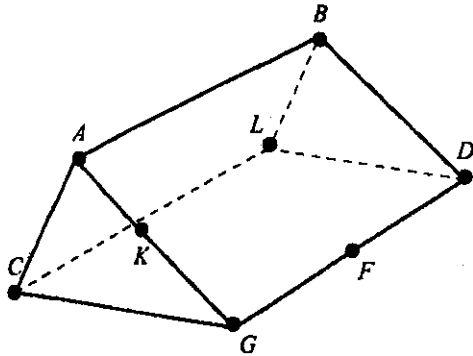


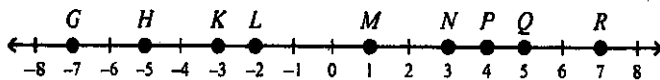
Figure 2

20. Name three collinear points.

- a. B, L, D
- b. C, L, B

- c. K, A, C
- d. D, F, G

Use the number line to find the measure.



21. PH

- a. 4.5
- b. 8

- c. 9
- d. -0.5

Name: _____

(Avg x, Avg y) OR

ID: A

Find the coordinates of the midpoint of a segment having the given endpoints.

- C 22. Q(1, -3), R(11, 5)
 a. (-1, 8)
 b. (-10, -8)

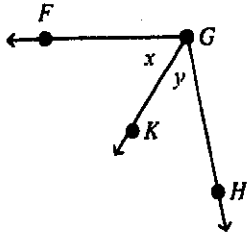
- c. (6, 1)
 d. (-5, -4)

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{1 + 11}{2}, \frac{-3 + 5}{2} \right)$$

$$(6, 1)$$

In the figure, \overrightarrow{GK} bisects $\angle FGH$.



23. If $m\angle FGK = 3v - 4$ and $m\angle KGH = 2v + 7$, find x .
 a. 33
 b. 58

$\angle x \approx \angle y$

- c. 11
 d. 29

$$3v - 4 = 2v + 7$$

$$v - 4 = 7$$

$$v = 11$$

Use the figure to find the angles.

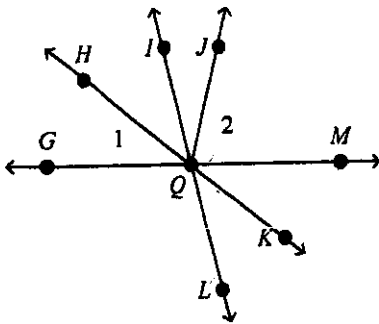
For questions 24-25.

$$3v - 4$$

$$3(11) - 4$$

$$33 - 4$$

?



$\angle x$ & $\angle y$ are adjacent sides form line.
 collinear

24. Name a linear pair.
 a. $\angle KQG, \angle HQM$
 b. $\angle GQL, \angle LQJ$

- c. $\angle GQI, \angle IQM$
 d. $\angle LQG, \angle KQM$

25. If $\angle MOI$ is 100° and $\angle JQI$ is 20° , what is the measure of $\angle MQJ$?
 a. 80°
 b. 90°

- c. 110°
 d. 120°

26. The measures of two complementary angles are $12q - 9$ and $8q + 14$. Find the measures of the angles.
 a. 42, 48
 b. 4.25

- c. 8.75
 d. 96, 84

This is the only pair that sums to 90

add to 90

$$12q - 9 + 8q + 14 = 90$$

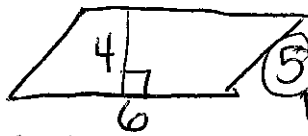
$$20q + 5 = 90$$

$$20q = 85$$

$$q = \frac{85}{20}$$

$$\frac{12(85)}{20} - 9 = 42$$

Name: _____

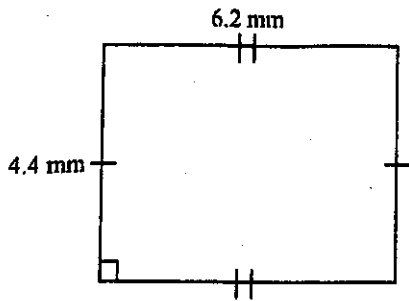


$A = 4(6)$

ID: A

Not a height

27. Find the area of the parallelogram. Round to the nearest tenth if necessary.



$A = bh = (6.2)(4.4)$

a. 30.9 mm^2

b. 27.3 mm^2

c. 30.9 mm^2

d. 27.3 mm^2

5

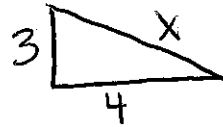
28. A right triangle has legs that are 3 inches and 4 inches. Find the length of the hypotenuse.

a. 12

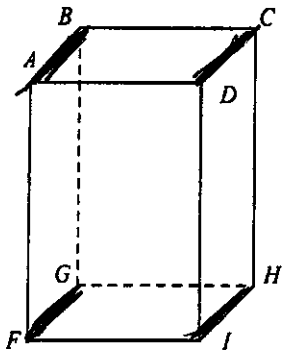
b. 7

c. 9

d. 5



29. Refer to the figure below.



$a^2 + b^2 = c^2$
 $3^2 + 4^2 = x^2$
 $9 + 16 = x^2$
 $25 = x^2$
 $x = 5$

Name all segments parallel to \overline{GF} .

a. $\overline{BC}, \overline{AD}, \overline{HI}$

b. $\overline{AB}, \overline{CD}, \overline{HI}$

c. $\overline{CD}, \overline{HI}$

d. $\overline{AB}, \overline{CD}$

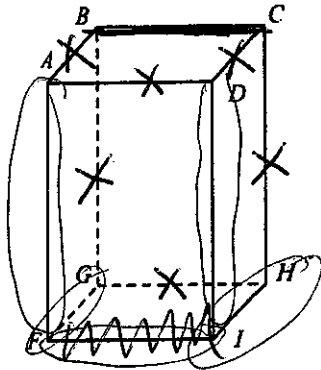
Name: _____

Skew lines

ID: A

- ① Do not intersect
- ② Are not in same plane

30. Refer to the figure below.



Name all segments skew to \overline{BC} .

a. ~~$\overline{FI}, \overline{AD}, \overline{FA}, \overline{DI}$~~

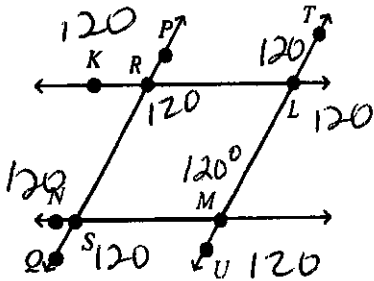
b. $\overline{FG}, \overline{GH}, \overline{HI}, \overline{FI}$

c. ~~$\overline{CD}, \overline{AD}, \overline{BG}, \overline{CH}$~~

d. $\overline{GF}, \overline{HI}, \overline{DI}, \overline{AF}$

$\overline{GF}, \overline{HI}, \overline{DI}, \overline{AF}$

31. In the figure, $m\angle NML = 120$, $\overleftrightarrow{PQ} \parallel \overleftrightarrow{TU}$ and $\overleftrightarrow{KL} \parallel \overleftrightarrow{NM}$. Find the measure of angle PRK .



These angles are corresponding \angle 's of \parallel lines

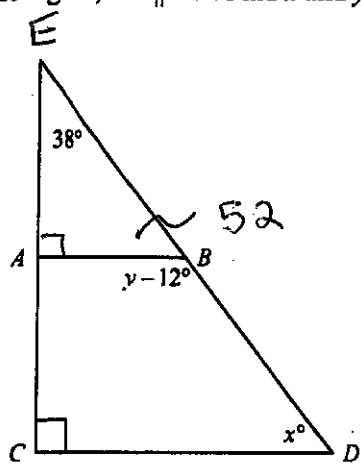
a. 120

b. 60

c. 100

d. 40

C 32. In the figure, $\overline{AB} \parallel \overline{CD}$. Find x and y .



$\triangle EAB$ similar to $\triangle ECD$

$$52 + (y - 12) = 180$$

$$y - 12 = 128$$

$$y = 140$$

$$x = 52$$

- a. $x = 32, y = 140$
- b. $x = 140, y = 52$
- c. $x = 52, y = 140$
- d. $x = 38, y = 154$

a 33. Determine the slope of the line through the given points.
 $T(6, 3), V(8, 8)$

- a. $\frac{5}{2}$
- b. $-\frac{2}{5}$

- c. $\frac{2}{5}$
- d. 0

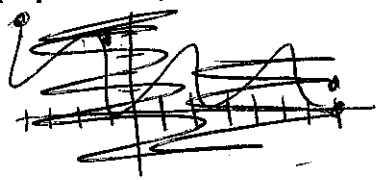
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{8 - 3}{8 - 6} = \frac{5}{2}$$

C 34. Determine whether \overline{WX} and \overline{YZ} are parallel, perpendicular, or neither.
 $W(-4, 5), X(-1, 4), Y(-1, 6), Z(7, 1)$

- a. perpendicular
- b. parallel
- c. neither

Neither



$$\text{slope } WX = \frac{4 - 5}{-1 - (-4)} = \frac{-1}{3}$$

$$\text{slope } YZ = \frac{1 - 6}{7 - (-1)} = \frac{-5}{8}$$

a 35. Determine whether \overline{WX} and \overline{YZ} are parallel, perpendicular, or neither.
 $W(5, 3), X(2, -1), Y(6, 7), Z(3, 3)$

- a. parallel
- b. neither
- c. perpendicular

$$\text{slope } WX = \frac{-1 - 3}{2 - 5} = \frac{-4}{-3} = \frac{4}{3}$$

$$\text{slope } YZ = \frac{3 - 7}{3 - 6} = \frac{-4}{-3} = \frac{4}{3}$$

$$\text{slope } YZ = \frac{1 - 6}{7 - (-1)} = \frac{-5}{8}$$

Same slope

C 36. Determine whether \overline{WX} and \overline{YZ} are parallel, perpendicular, or neither.
 $W(4, 2), X(2, 5), Y(2, 4), Z(-1, 2)$

- a. neither
- b. parallel
- c. perpendicular

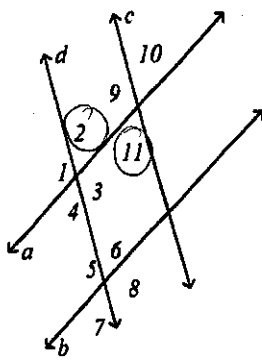
$$\text{slope } WX = \frac{5 - 2}{2 - 4} = \frac{3}{-2} = -\frac{3}{2}$$

$$\text{slope } YZ = \frac{2 - 4}{-1 - 2} = \frac{-2}{-3} = \frac{2}{3}$$

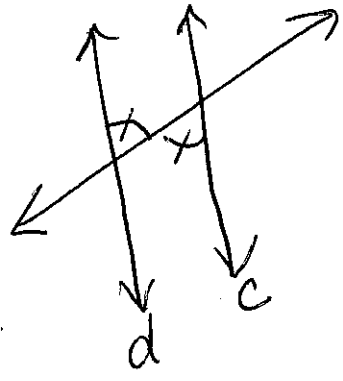
Slopes are

"negative reciprocals"
 they are perpendicular

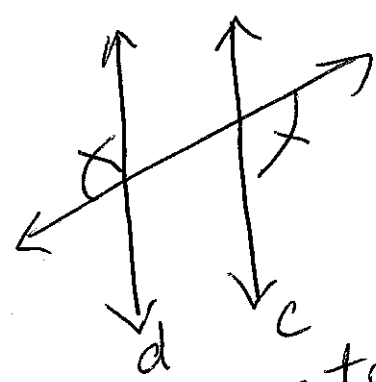
37. $\angle 11 \cong \angle 2$ Which lines are parallel, why?



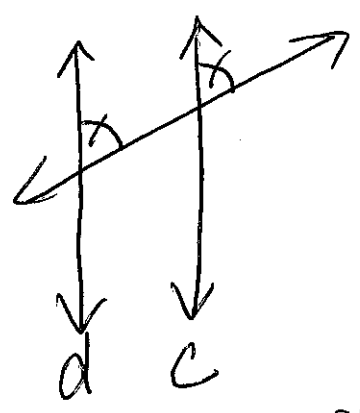
- a. $c \parallel d$; congruent corresponding angles
- ~~b. $a \parallel b$; congruent corresponding angles~~
- c. $c \parallel d$; congruent alternate interior angles
- d. $a \parallel b$; congruent alternate interior angles



alternate, interior
 $d \parallel c$

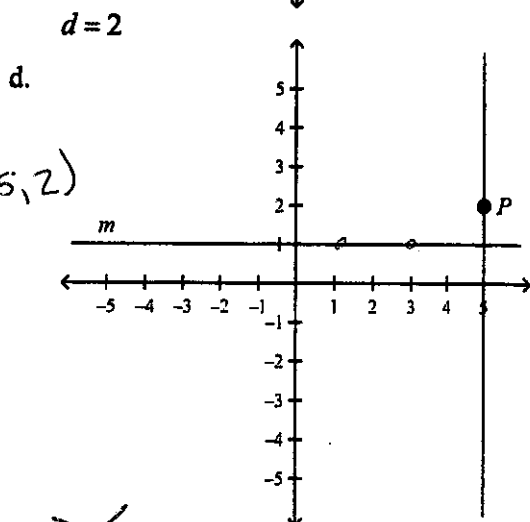
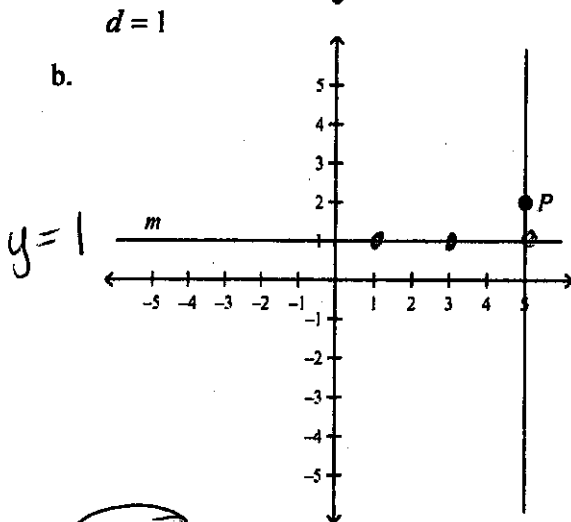
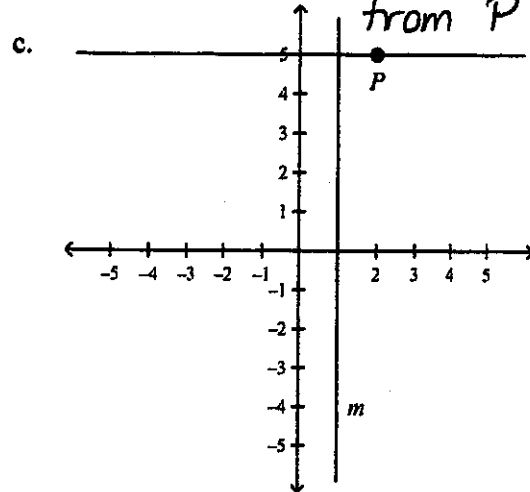
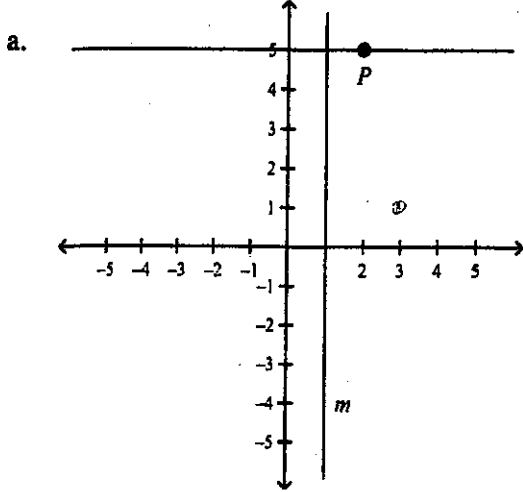


alternate exterior
 $d \parallel c$



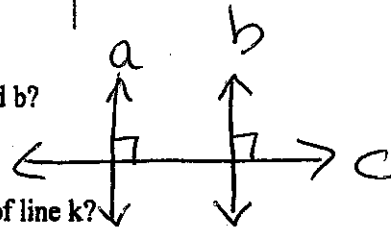
corresponding \angle 's
 $d \parallel c$

38. Line m contains points $(3, 1)$ and $(1, 1)$. Point P has coordinates $(5, 2)$. Find the distance from P to the line



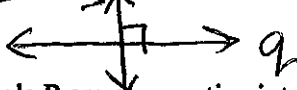
39. Lines a and b are both perpendicular to line c . What must be true about lines a and b ?

- a. lines a and b are perpendicular
- b. the slopes of lines a and b are different.
- c. lines a and b intersect
- d. lines a and b are parallel



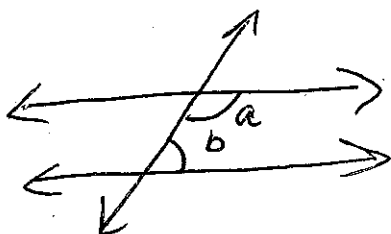
40. Line q has a slope of zero and line q is perpendicular to line k . What is the slope of line k ?

- a. 0
- b. positive
- c. negative
- d. undefined



41. Angle A and angle B are consecutive interior angles of two parallel lines cut by a transversal. Angle A has a measure of $2x + 4$ and angle B has a measure of $3x + 6$. Solve for x .

- a. 40
- b. 34
- c. 38
- d. 170



$$2x + 4 + 3x + 6 = 180$$

$$5x + 10 = 180$$

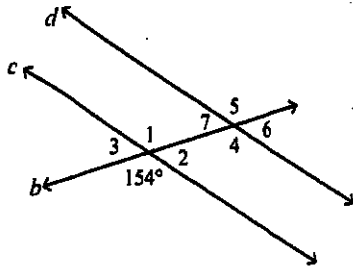
consecutive interior \angle 's
Sum to 180

$$x = 34$$

up & down is undefined,

5/1/76

C 42. In the figure, line $d \parallel$ line c . Find the measure of each given angle.

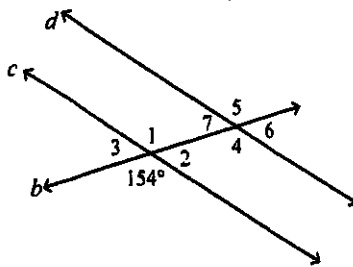


$$154 + \angle 3 = 180$$

- $\angle 3$
 a. 144°
 b. 36°

- c. 26°
 d. 154°

d 43. In the figure, line $d \parallel$ line c . Find the measure of each given angle.

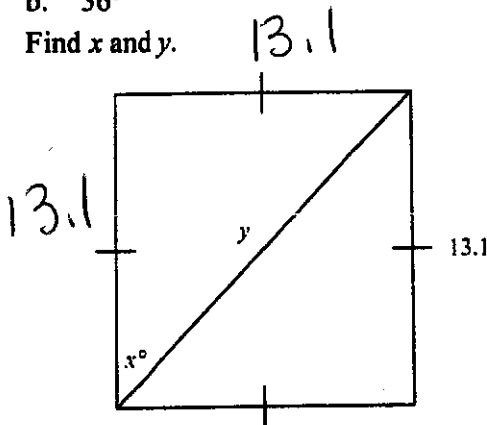


$$\begin{aligned} \angle 3 &= 26 \\ \angle 3 &\approx \angle 7 \\ \angle 7 &= 26 \end{aligned}$$

- $\angle 7$
 a. 144°
 b. 36°

- c. 154°
 d. 26°

d 44. Find x and y .

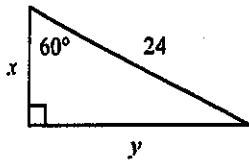


$$x^\circ = 45$$

- a. $x = 45^\circ, y = 13.1$
 b. $x = 30^\circ, y = 13.1$

- c. $x = 30^\circ, y = 13.1\sqrt{2}$
 d. $x = 45^\circ, y = 13.1\sqrt{2}$

d 45. Find x



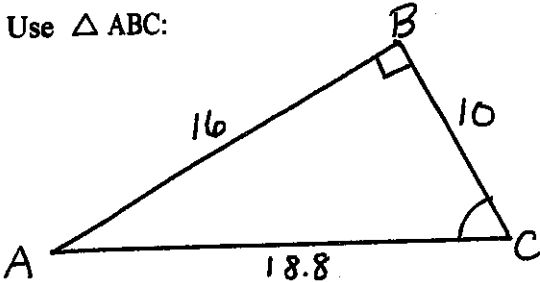
cos
~~sin~~ $60^\circ = \frac{x}{24}$
~~24 cos 60 = x~~

$24 \cos 60^\circ =$

d. x=12

c 46. Use $\triangle ABC$:

- a. x=24 b. x=12 $\sqrt{3}$ c. x=24



$\tan \angle C = \frac{o}{a} = \frac{16}{10}$

Using $\triangle ABC$, find the tangent of angle C.

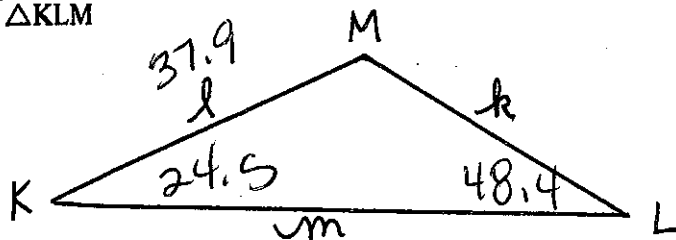
- a. 16 b. 10 c. 1.6 d. 0.625

a 47. Use $\triangle ABC$: above for question 47

$\tan \angle A = \frac{10}{16}$
 $m \angle A = \tan^{-1} \left(\frac{10}{16} \right)$

Using $\triangle ABC$, find the measure of angle A.

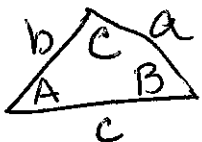
- b 48. Use $\triangle KLM$
 a. 32 b. 38 c. 58 d. 0.009



If $m\angle L = 48.4$, $m\angle K = 24.5$, and $l = 37.9$, find k.

- a. 15.7 b. 21.0 c. 28.3 d. 68.3

Law of sines



$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

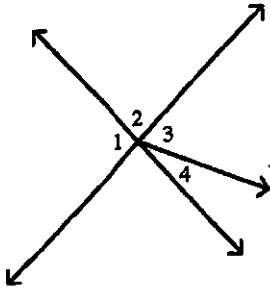
$\frac{\sin 48.4}{37.9} = \frac{\sin 24.5}{k}$

$k = \frac{37.9 \sin 24.5}{\sin 48.4}$

Name: _____

Short Answer

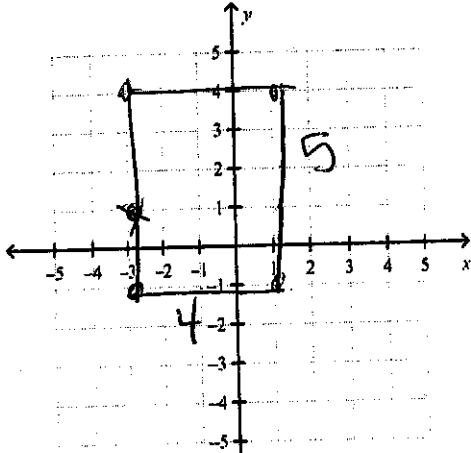
49. In the figure below, if $\angle 3$ is complementary to $\angle 4$, then $m\angle 1 = ?$



$$m\angle 3 + m\angle 4 = 90$$

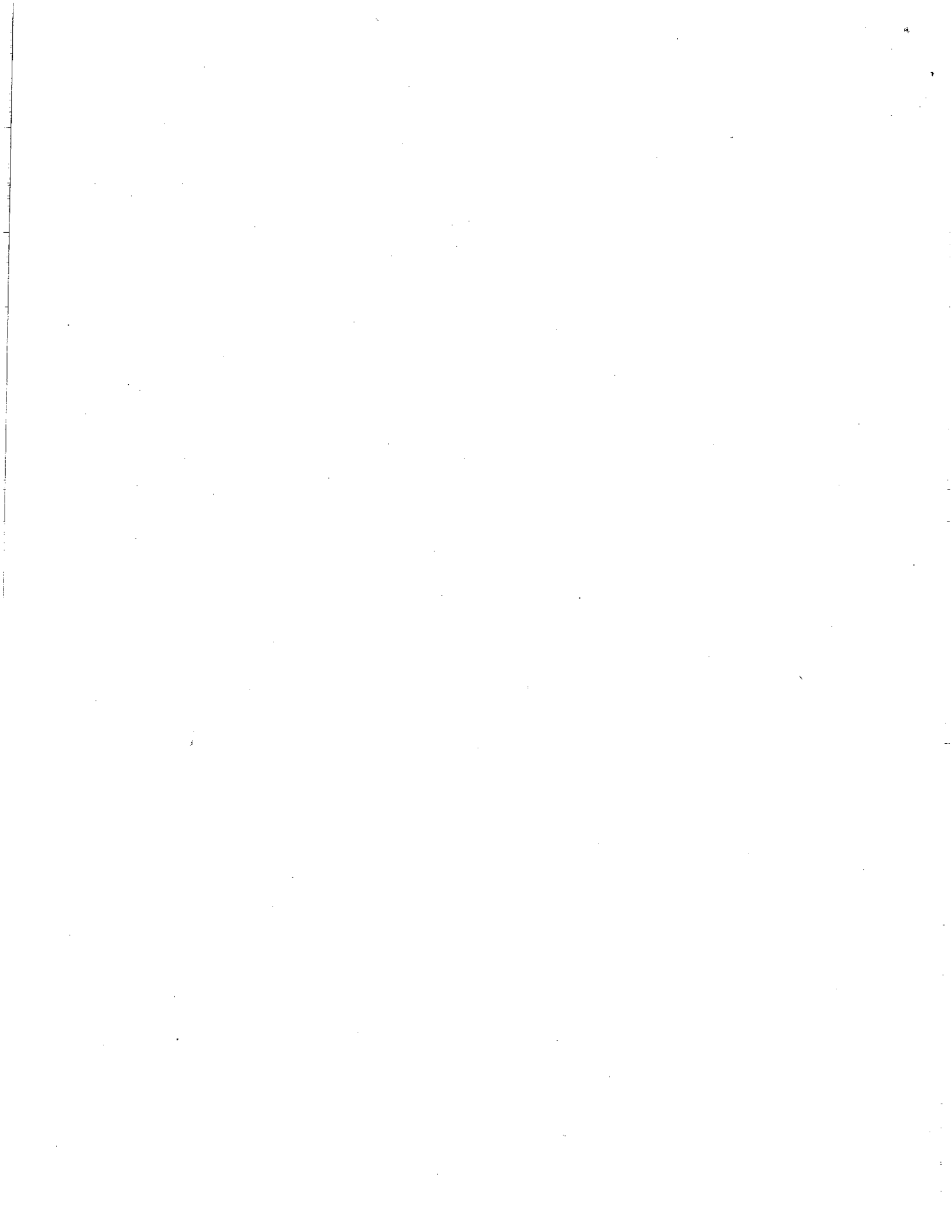
- a. 45° b. 90° c. 70° d. 180°

50. Graph the figure with the given vertices. Then find the area of the figure.
 $(-3, -1), (-3, 4), (1, 4), (1, -1)$



20

- a. 9 b. 20 c. 18 d. 10



Area of a Rectangle: $A = lw$
Perimeter of a Rectangle: $P = 2l + 2w$

Pythagorean Theorem: $a^2 + b^2 = c^2$

Distance Formula: $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Midpoint Formula

1) Coordinate Plane: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

2) On a line: $\frac{a+b}{2}$

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Parallel lines have same slope.

Perpendicular lines have slopes that are opposite reciprocals

Two Lines cut by a Transversal

Congruent \angle s

Corresponding \angle s

Alt. Ext. \angle s

Alt. Int. \angle s

Supplementary \angle s

Consecutive Int \angle s

Linear Pairs

Vertical \angle s

Congruent Triangles

ASA AAS HA

SAS HL LA

SSS LL

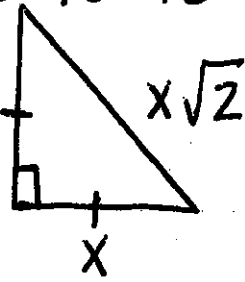
Similar Triangles

SSS $\frac{a}{b} = \frac{c}{d}$

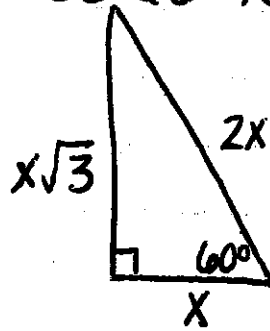
AA

SAS

45-45-90



30-60-90



Law of Sines:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

SOH CAHTOA

$$\text{sine} = \frac{\text{opp}}{\text{hyp}}$$

$$\text{cosine} = \frac{\text{adj}}{\text{hyp}}$$

$$\text{tangent} = \frac{\text{opp}}{\text{adj}}$$

Exterior \angle of a Δ = sum of 2 remote int. \angle s