

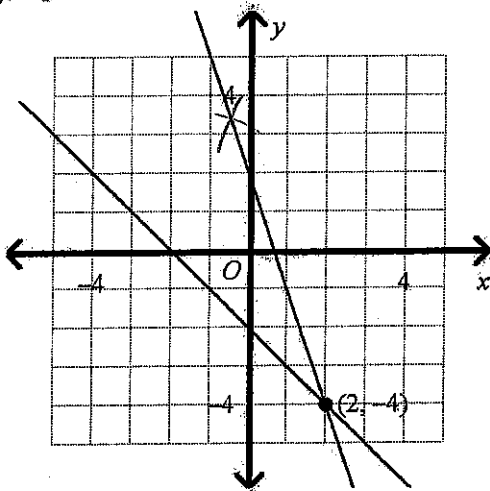
Integrated Math 1 - 2nd Semester Pre/Post Review

Multiple Choice

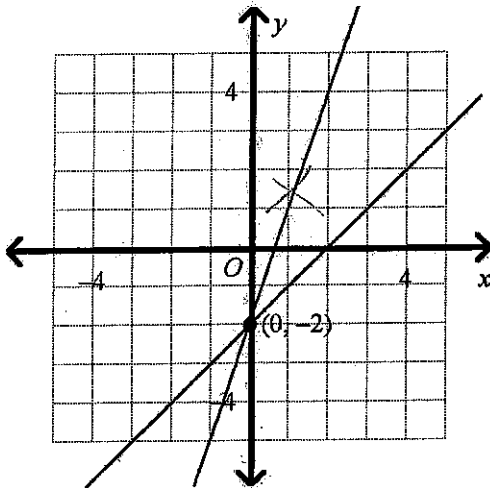
Identify the choice that best completes the statement or answers the question.

What is the solution of the system? Use a graph.

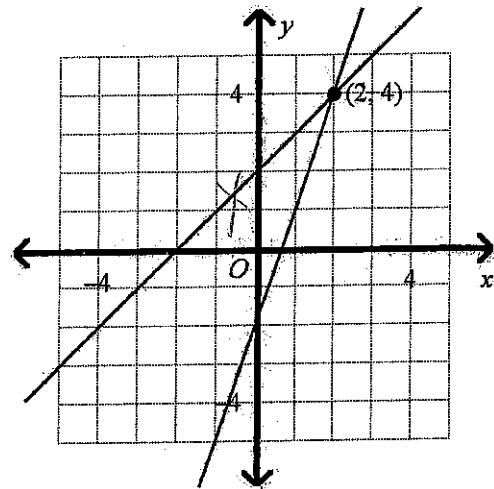
D 1. $y = 3x + 2$ $y\text{-int} = 2, \text{ up } 3, \text{ over } 1$
 $y = \frac{1}{3}x - 2$ $y\text{-int} = -2, \text{ up } 1, \text{ over } 3$
 a. m b



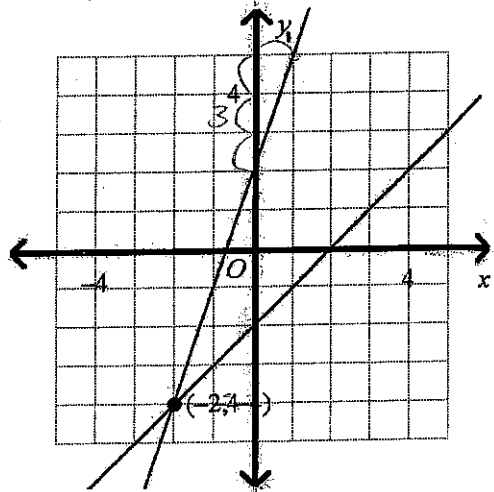
b.



c.



d.



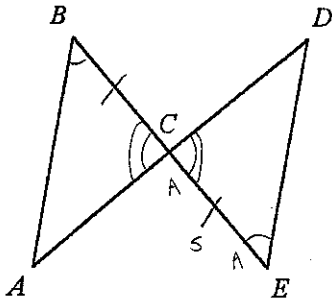
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2. Supply the missing reasons to complete the proof.

Given: $\angle B \cong \angle E$ and $\overline{BC} \cong \overline{EC}$

Prove: $\overline{AC} \cong \overline{DC}$



Statement	Reasons
1. $\angle B \cong \angle E$ and $\overline{BC} \cong \overline{EC}$	1. Given
2. $\angle ACB \cong \angle DCE$	2. Vertical angles are congruent.
3. $\triangle ACB \cong \triangle DCE$	3. <u>?</u> ASA
4. $\overline{AC} \cong \overline{DC}$	4. <u>?</u> CPCTC

- a. ASA; Substitution
- b. ASA; Corresp. parts of $\cong \Delta$ are \cong .
- c. AAS; Corresp. parts of $\cong \Delta$ are \cong .
- d. SAS; Corresp. parts of $\cong \Delta$ are \cong .

Name: _____

Tom: $y = 3x + 21$ solve system (substitution?)
 Nita: $y = 4x + 14$

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Short Answer

$$\begin{array}{r} 3x + 21 = 4x + 14 \\ -3x \quad -3x \\ \hline 21 = x + 14 \\ -14 \quad -14 \\ \hline 7 = x \end{array} \quad \begin{array}{l} \rightarrow 21 = x + 14 \\ -14 \quad -14 \\ \hline 7 = x \end{array} \quad \boxed{7 \text{ months}}$$

3. Tom has a collection of 21 CDs and Nita has a collection of 14 CDs. Tom is adding 3 CDs a month to his collection while Nita is adding 4 CDs a month to her collection. Find the number of months after which they will have the same number of CDs.

What is the solution of the system? Use substitution.

4. $y = 2x + 4$
 $y = 4x$

$$\begin{array}{r} 4x = 2x + 4 \\ -2x \quad -2x \\ \hline 2x = 4 \\ \frac{2x}{2} = \frac{4}{2} \quad x = 2 \end{array} \quad y = 4(2) = 8 \quad \boxed{(2, 8)}$$

5. The length of a rectangle is 3 centimeters more than 3 times the width. If the perimeter of the rectangle is 46 centimeters, find the dimensions of the rectangle. $l = 3w + 3$

$$\begin{array}{l} l + l + w + w = 46 \\ (2w + 3) + (3w + 3) + w + w = 46 \\ 8w + 6 = 46 \\ -6 \quad -6 \\ \hline 8w = 40 \\ \frac{8w}{8} = \frac{40}{8} \\ w = 5 \text{ cm} \\ l = 3(5) + 3 = 18 \text{ cm} \end{array}$$

What is the solution of the system? Use elimination.

6. $2x + y = 12$
 $+ 5x - y = 23$

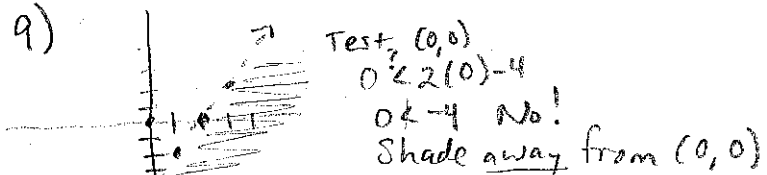
$$\begin{array}{r} 7x = 35 \\ \frac{7x}{7} = \frac{35}{7} \\ x = 5 \end{array} \quad \begin{array}{r} 2(5) + y = 12 \\ 10 + y = 12 \\ -10 \quad -10 \\ \hline y = 2 \end{array} \quad \boxed{(5, 2)}$$

Is $(5, -2)$ a solution of the inequality? $\begin{matrix} x \\ y \end{matrix}$

7. $y \geq 4x - 5$ $-2 \geq 4(5) - 5$
 $-2 \geq 20 - 5 = 15$ **No!**
8. $3y + 12 < 12x$ $3(-2) + 12 < 12(5)$
 $-6 + 12 < 60$
 $6 < 60$ **Yes!**

Graph the inequality.

9. $y < 2x - 4$ $y\text{-int} = -4$
 dashed line up 2, right 1



10. Graph the inequality.

$8x + 6y \geq 8$

$8(0) + 6y = 8$

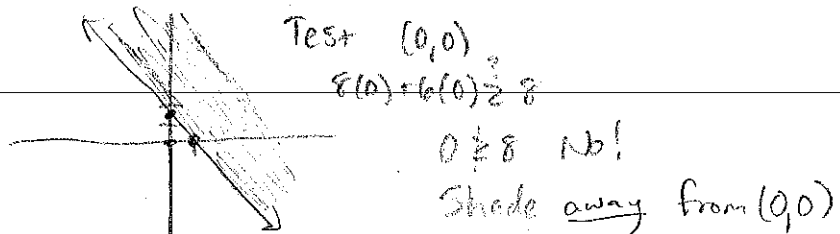
$\frac{6y}{6} = \frac{8}{6}$

$y = \frac{8}{6} = \frac{4}{3} = 1.\bar{3}$

$8x + 6(0) = 8$

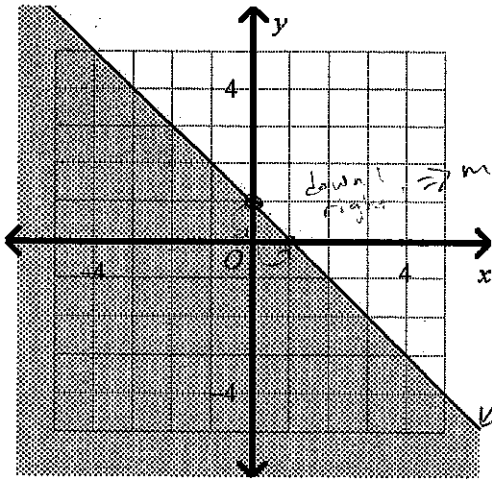
$\frac{8x}{8} = \frac{8}{8}$

$x = 1$



Which inequality represents the graph?

11.



$$y \leq -x + 1$$

down 1, right 1 $\Rightarrow m = \frac{-1}{1} = -1$
 $y\text{-int} = 1 \Rightarrow b = 1$

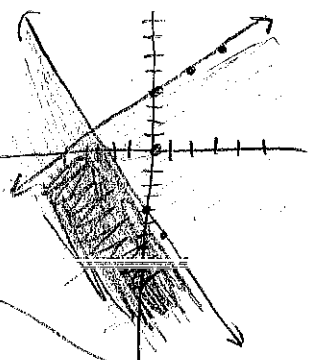
solid so \leq or \geq

$y \leq -x + 1$ or $y \geq -x + 1$
 Test (0, 0)
 $0 \leq -1(0) + 1$ $0 \leq -1(0) + 1$
 $0 \leq 1 \checkmark$ Yes! $0 \geq 1$ No!

What is the graph of the system?

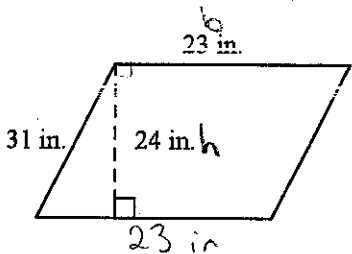
solid m b $y\text{-int} = 4$ up, right 1
 12. $y \leq \frac{1}{2}x + 4$ solid
 $2x + y \leq -4$ solid
 $-2x$ $-y$ -4 $y\text{-int} = -4$, down 2, right 1
 $y \leq -2x - 4$

Test (0, 0)
 $0 \leq 0 + 4$ shade
 $0 \leq 4 \checkmark$ toward (0, 0)
 $2(0) + (0) \leq -4$
 $0 \leq -4$ No!
 shade away from (0, 0)



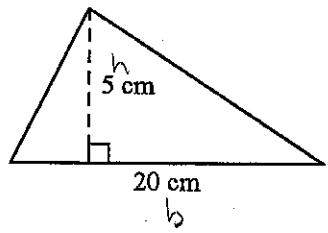
Find the area. The figure is not drawn to scale.

13.



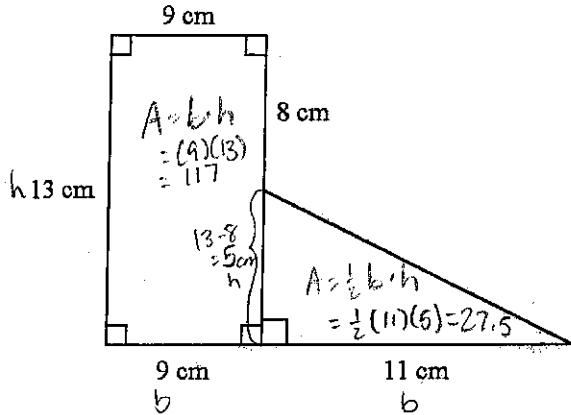
$A = b \cdot h$
 ↑
 Perpendicular to base
 $A = (23)(24) = 552 \text{ in}^2$

14.



$A = \frac{1}{2} b \cdot h$
 $= \frac{1}{2} (20)(5) = 50 \text{ cm}^2$

15.

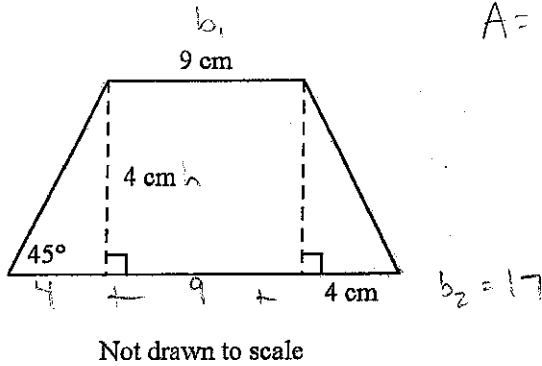


$$A = 117 + 27.5 = 144.5 \text{ cm}^2$$

- 16. A parallelogram has sides measuring 22.5 m and 37.1 m. The height corresponding to the 22.5-m base is 9.6 m. Find the height, to the nearest tenth of a meter, corresponding to the 37.1-m base.
- 17. An isosceles triangle has area of 140 ft². If the base is 14 ft, what is the length of each leg? Round your answer to the nearest tenth.

Find the area of the trapezoid. Leave your answer in simplest radical form.

18.



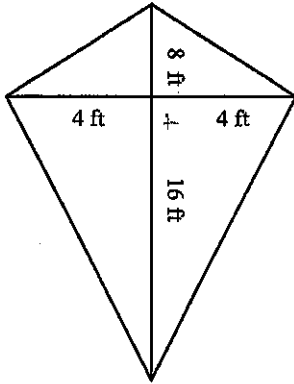
$$A = \frac{1}{2} (9 + 17) (4) = 52 \text{ cm}^2$$

Not drawn to scale

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19. What is the area of the kite?



$$A = \frac{1}{2} d_1 d_2$$

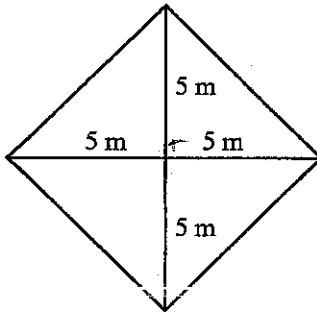
$$d_1 = 8$$

$$d_2 = 24$$

$$A = \frac{1}{2} (8)(24) = \boxed{96 \text{ ft}^2}$$

Not drawn to scale

20. Find the area of the rhombus.



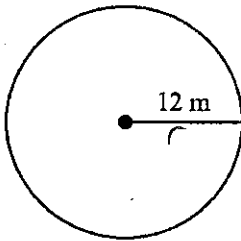
$$A = \frac{1}{2} d_1 d_2$$

$$d_1 = 10$$

$$d_2 = 10$$

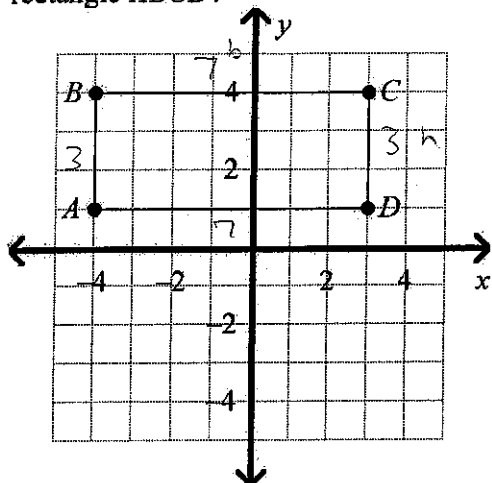
$$A = \frac{1}{2} (10)(10) = \boxed{50 \text{ m}^2}$$

21. Find the circumference of the circle to the nearest tenth. Use 3.14 for π .



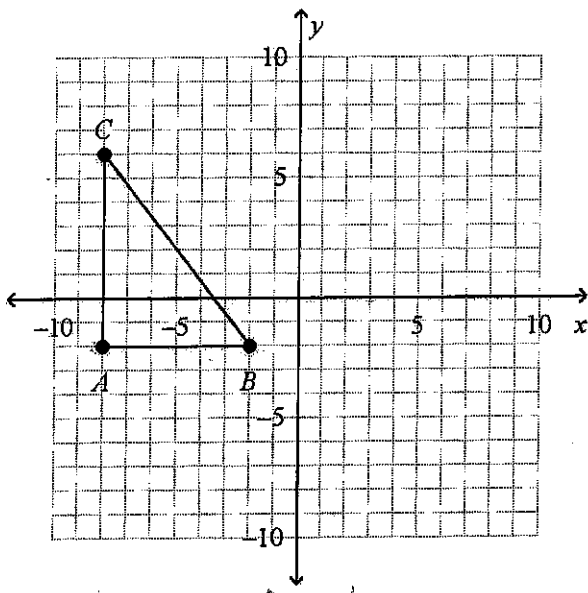
$$C = 2\pi r = 2(3.14)(12) = \boxed{75.4 \text{ m}}$$

22. Rectangle $ABCD$ is shown below. What is the perimeter of rectangle $ABCD$? What is the area of rectangle $ABCD$?



$P = b + h + b + h$
 $P = 7 + 3 + 7 + 3 = 20 \text{ units}$
 $A = (7)(3) = 21 \text{ units}^2$
 $A = b \cdot h$

23. Find the perimeter and area of $\triangle ABC$ with vertices $A(-8, -2)$, $B(-2, -2)$, and $C(-8, 6)$.



24. What is the conclusion of the following conditional?

A number is divisible by 2 if the number is even.

25. Identify the hypothesis and conclusion of this conditional statement:

If tomorrow is Monday, then yesterday was Saturday.

26. Another name for an *if-then* statement is a conditional. Every conditional has two parts. The part following *if* is the hypothesis, and the part following *then* is the conclusion.

27. Write this statement as a conditional in *if-then* form:

All triangles have three sides.

If it is a triangle, then it has three sides.

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28. When a conditional and its converse are true, you can combine them as a true

What is the simplified form of each expression?

$x^0 = 1$ $x^{-n} = \frac{1}{x^n}$ $\frac{1}{x^{-n}} = \frac{x^n}{1}$ biconditional

29. $(-8.9)^0 = \boxed{1}$

30. $-(-3)^{-1} = -\frac{1}{(-3)^1} = \boxed{-\frac{1}{3}}$

31. $(2)^{-5} = \frac{1}{2^5} = \frac{1}{32}$

32. $5c^5b^{-2} = \frac{5c^5}{b^2}$

33. $\frac{7^{12}}{c^3d^4} = \frac{7^2c^7}{d^4}$

34. What is the value of $4x^{-3}y^{-2}$ for $x = (-2)$ and $y = (4)$? $4(-2)^{-3}(4)^{-2} = -0.03125 = \boxed{-\frac{1}{32}}$
Decimal \rightarrow Fraction MATH ENTER ENTER

35. What is the value of $\frac{1}{2^{-2}x^{-3}y^5}$ for $x = (2)$ and $y = (-4)$? $\frac{1}{2^{-2}(2)^{-3}(-4)^5} = \boxed{-\frac{1}{32}}$
fraction: ALPHA Y= ENTER

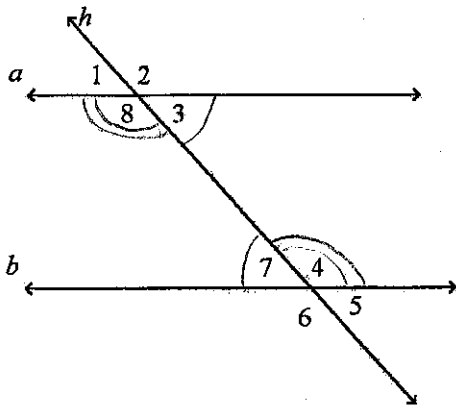
36. What is the value of $\frac{y^{-5}}{x^{-3}}$ for $x = (2)$ and $y = (-4)$? $\frac{(-4)^{-5}}{(2)^{-3}} = -0.0078125 = \boxed{-\frac{1}{128}}$

Simplify the radical expression.

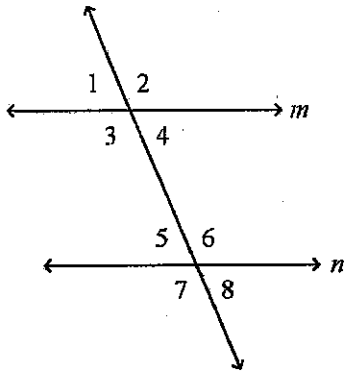
37. $\sqrt{72}$
9 8
3 3 2 4
once on outside
inside

$2 \cdot 3 \sqrt{2}$
6 $\sqrt{2}$

Use the diagram to find the following.



38. Identify a pair of alternate interior angles. On different sides of transversal, inside 2 parallel lines $\angle 3, \angle 7$ and $\angle 4, \angle 8$
39. What is the relationship between $\angle 4$ and $\angle 5$?

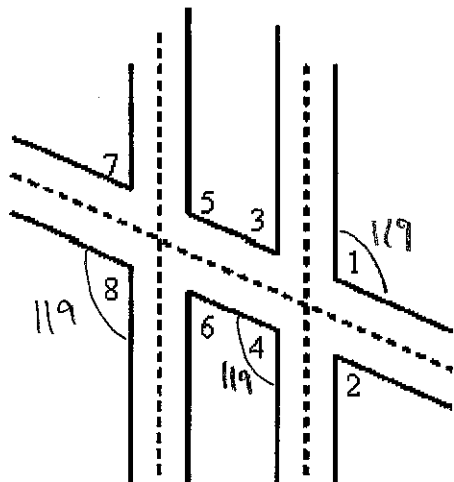


Inside \parallel lines, different sides of transversal
Alternate Interior

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This diagram of airport runway intersections shows two parallel runways. A taxiway crosses both runways.



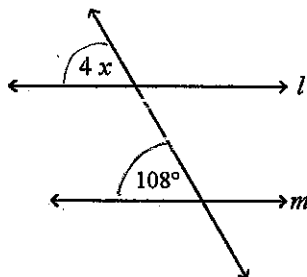
$\angle 8 \cong \angle 4$ b/c corresponding $\angle s \cong$
 $\angle 1 \cong \angle 2$ b/c vertical $\angle s \cong$

40. If $\angle 8$ measures 119, what is the sum of the measures of $\angle 1$ and $\angle 2$?

add

$$119 + 119 = \boxed{238}$$

41. Find the value of x . $l \parallel m$. The diagram is not to scale.

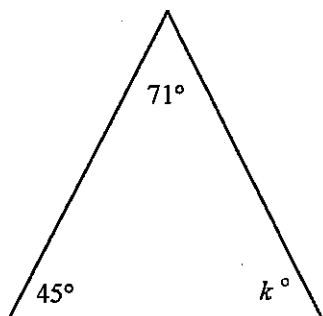


Corresponding $\angle s \cong$

$$\frac{4x}{4} = \frac{108}{4}$$

$$\boxed{x = 27}$$

42. Find the value of k . The diagram is not to scale.

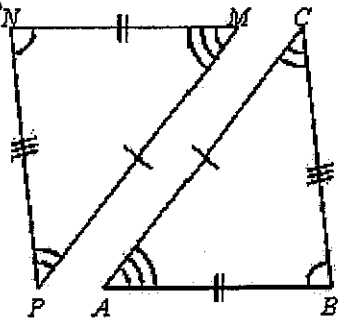


$\angle s$ in a \triangle add to 180°

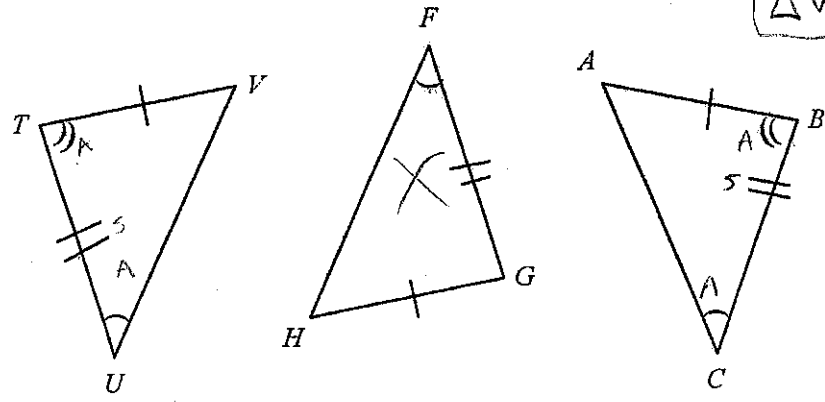
$$\begin{aligned} k + 45 + 71 &= 180 \\ k + 116 &= 180 \\ -116 &\quad -116 \\ \hline \boxed{k} &= \boxed{64} \end{aligned}$$

43. $\triangle ABC \cong ? \triangle MNP$

Match markings in order



44. Which triangles are congruent by ASA?
angle side angle



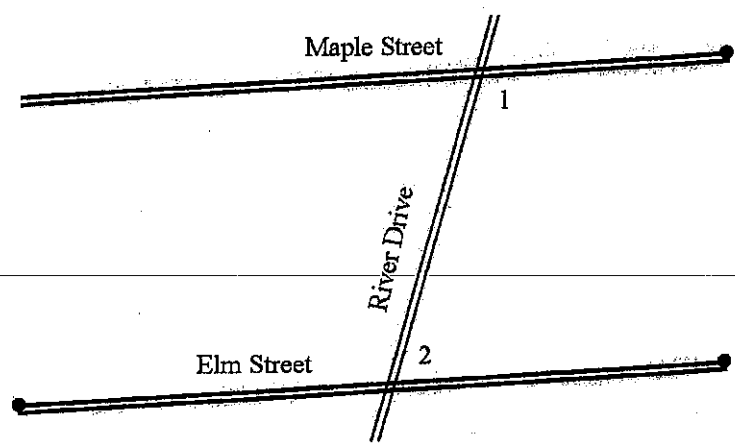
match order of markings
 $\triangle VUT \cong \triangle ACB$

or
 $\triangle VTU \cong \triangle ABC$

or
 $\triangle TVU \cong \triangle BAC$

etc...

45. The map given shows the relationship between three streets. Suppose that $m\angle 1 + m\angle 2 = 180^\circ$. Are Maple Street and Elm Street parallel? Explain.

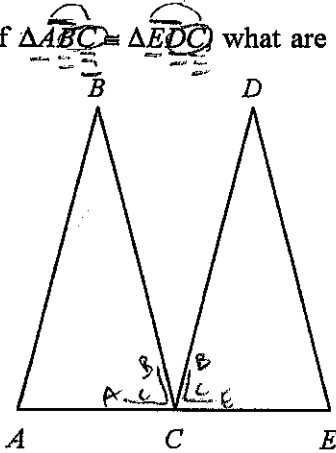


Yes - same side interior \angle s are supplementary

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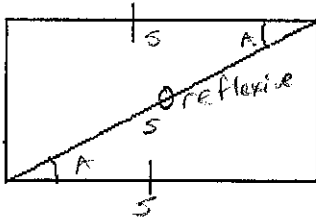
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46. If $\triangle ABC \cong \triangle EDC$ what are the congruent corresponding parts? Match order



- $\angle A \cong \angle E$
- $\angle B \cong \angle D$
- $\angle ACB \cong \angle ECD$
- $\overline{AB} \cong \overline{ED}$
- $\overline{BC} \cong \overline{DC}$
- $\overline{AC} \cong \overline{EC}$

47. Are the triangles congruent? Justify your answer.



Yes - SAS