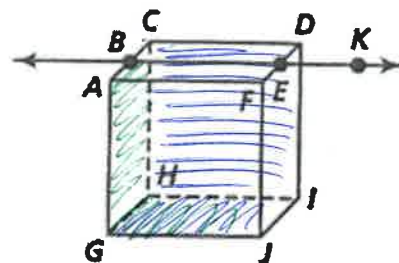


SEMESTER 1 REVIEW

Use the figure to the right to answer questions 1-4.



- What is the intersection of plane GHIJ and plane CDIH?
 - \overline{GH}
 - point H
 - \overline{CD}
 - \overline{HI}
- Which four points are coplanar?
 - A, B, E, I
 - B, C, D, E
 - A, C, F, H
 - E, F, I, K
- What is another way to name plane ABEF?
 - point A
 - \overline{CD}
 - plane ACDF
 - plane CDIH
- What is the intersection of plan HGJ and plane ACH?
 - point H
 - point C
 - \overline{CH}
 - \overline{GH}
- What is the next number in the sequence: 128, 64, 32, 16, 8, ...
 - 5
 - 10
 - 15
 - 4
- Find the next two terms in the sequence: 10, -14, 18, -22, ...
 - 26, 30
 - 30, 26
 - 26, 30
 - 26, -30
- If $EG = 42$, find the value of y .



$$3y + 4 + 5y - 2 = 42$$

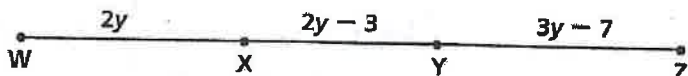
$$8y + 2 = 42$$

$$8y = 40$$

$$y = 5$$

- 5
- 5.5
- 6
- 7

8. If $WZ = 46$, find the value of y .



$$2y + 2y - 3 + 3y - 7 = 46$$

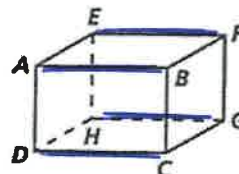
$$7y - 10 = 46$$

$$7y = 56$$

$$y = 8$$

- 6.75
- 7
- 8
- 9

9. Refer to the diagram at the right. Which segment is NOT parallel to EF?



- AB
- DC
- HG
- BF

10. Find the distance between points $S(-1,3)$ and $T(4,-9)$ using the distance formula.

- 5
- 12
- 13
- 17

$$\sqrt{(-1-4)^2 + (3-(-9))^2}$$

$$\sqrt{(-5)^2 + (12)^2}$$

$$\sqrt{25 + 144}$$

$$\sqrt{169}$$

$$13$$

11. What is the midpoint of the segment with endpoints at $(2,8)$ and $(-6,10)$?

- $(-2,9)$
- $(-4,1)$
- $(-4,9)$
- $(-2,1)$

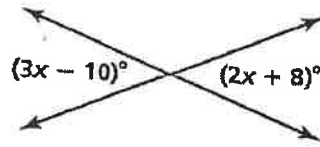
$$\left(\frac{2+(-6)}{2}, \frac{8+10}{2} \right) \left(\frac{-4}{2}, \frac{18}{2} \right) (-2, 9)$$

12. Which is the converse of the statement: *If something is a bird, then it can fly.*

- a. If it can't fly, then something is not a bird. **b. If it can fly, then something is a bird.**
 c. If something is not a bird, then it can't fly. d. If something is a bird, then it can't fly.

13. Find the value of x .

- a. 18** b. 3.6
 c. 44 d. 36.4



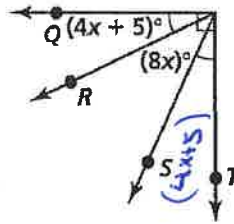
$$3x - 10 = 2x + 8$$

$$x - 10 = 8$$

$$x = 18$$

14. Find the value of x .

- a. 3 b. 4
c. 5 d. 10



$$4x + 5 + 4x + 5 + 8x = 90$$

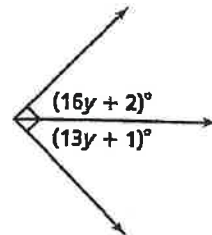
$$16x + 10 = 90$$

$$16x = 80$$

$$x = 5$$

15. Find the value of y in the diagram.

- a. $-1/3$ b. $1/3$
c. 3 d. 5



$$16y + 2 + 13y + 1 = 90$$

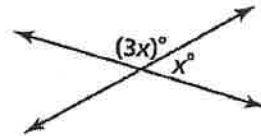
$$29y + 3 = 90$$

$$29y = 87$$

$$y = 3$$

16. Find the value of x .

- a. 35 **b. 45**
 c. 90 d. 135



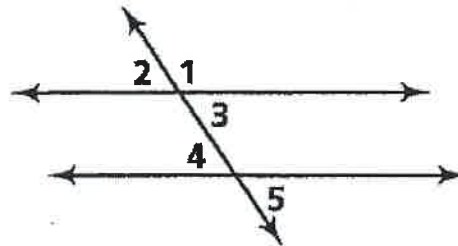
$$3x + x = 180$$

$$4x = 180$$

$$x = 45$$

17. Which angles are alternate interior angles?

- a. $\angle 2$ and $\angle 3$ b. $\angle 3$ and $\angle 5$
 c. $\angle 1$ and $\angle 4$ **d. $\angle 3$ and $\angle 4$**

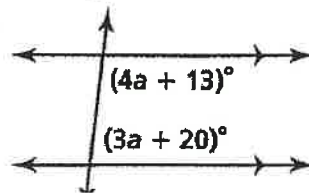


18. Which angles are corresponding?

- a. $\angle 2$ and $\angle 4$** b. $\angle 2$ and $\angle 1$
 c. $\angle 1$ and $\angle 5$ d. $\angle 2$ and $\angle 5$

19. Find the value of a in the diagram.

- a. 7 **b. 21**
 c. 84 d. 97



$$4a + 13 + 3a + 20 = 180$$

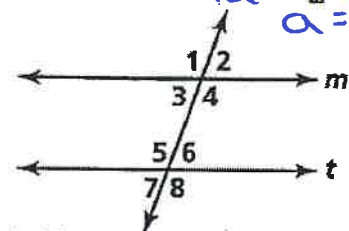
$$7a + 33 = 180$$

$$7a = 147$$

$$a = 21$$

20. Which condition will prove that line $m \parallel$ line t ?

- a. $\angle 1 \cong \angle 3$ b. $m\angle 3 + m\angle 4 = 180$
 c. $\angle 7 \cong \angle 1$ **d. $m\angle 4 + m\angle 6 = 180$**



21. What is the slope of a line parallel to the line through $(4, -3)$ and $(-1, 7)$?

- a. 2 **b. -2** c. $1/2$ d. $-1/2$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - (-3)}{-1 - 4} = \frac{10}{-5} = -2$$

22. Which line is perpendicular to $y = \frac{1}{4}x + 6$?

- a. $y = \frac{1}{4}x - 6$ b. $y = -\frac{1}{4}x + 2$ c. $y = 4x + 1$ **d. $y = -4x$**

$m = -4$ opposite reciprocal slope

$$y - y_1 = m(x - x_1)$$

$$y - 6 = -\frac{3}{2}(x + 4)$$

$$y - 6 = -\frac{3}{2}x - \frac{12}{2}$$

$$x \quad y \quad -\frac{3}{2}x - 6$$

$$y = -\frac{3}{2}x$$

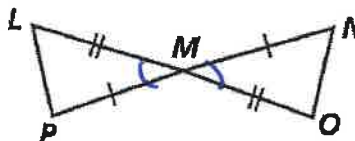
$$m = -\frac{3}{2}$$

23. Write the equation of a line that is perpendicular to $y = \frac{2}{3}x - 4$ and goes through $(-4, 6)$.

- a. $y = \frac{3}{2}x$ b. $y = \frac{2}{3}x + 8\frac{2}{3}$ c. $y = -\frac{3}{2}x + 12$ d. $y = \frac{3}{2}x + 10$

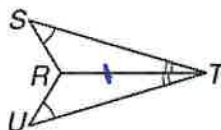
24. Why are these two triangles congruent?

- a. SSS **b. SAS**
c. ASA d. not possible to tell



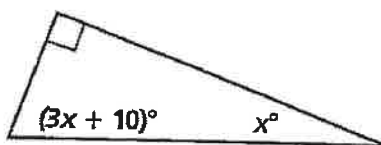
25. Why are these two triangles congruent?

- a. AAS** b. ASA
c. SAS d. not possible to tell



26. Find the value of x.

- a. 40 b. 30
c. 20 d. 10



$$3x + 10 + x + 90 = 180$$

$$4x + 100 = 180$$

$$4x = 80$$

$$x = 20$$

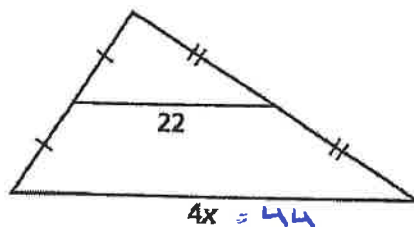
27. The measure of the vertex angle of an isosceles triangle is 110 degrees. Find the measure of a base angle.

- a. 110° b. 70° c. 45° **d. 35°**



28. Find the value of x in the diagram.

- a. 5.5 **b. 11**
c. 22 d. 44



$$4x = 44$$

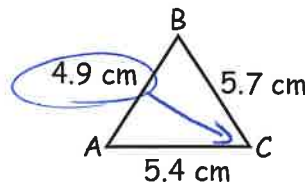
$$x = 11$$

29. Which side lengths would NOT make a triangle?

- a. 2, 4, 5 b. 3, 8, 6 c. 4, 5.1, 9 **d. 4, 3, 7**

30. Which is the smallest angle of the triangle?

- a. $\angle A$ b. $\angle B$ **c. $\angle C$**



31. If two sides of a triangle measure 2.4 cm and 6.2 cm, find a range of possible measures for the third side.

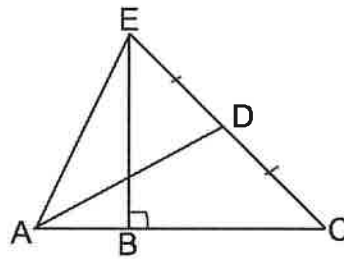
- a. $2.4 < x < 6.2$ **b. $3.8 < x < 8.6$** c. $3.4 < x < 8.2$ d. $1.2 < x < 3.1$

$$\begin{array}{r} 6.2 \\ -2.4 \\ \hline 3.8 \end{array}$$

$$\begin{array}{r} 6.2 \\ +2.4 \\ \hline 8.6 \end{array}$$

32. What type of special segment is \overline{AD} ?

- a. altitude
- b. midsegment
- c. median
- d. angle bisector



33. What type of special segment is \overline{EB} ?

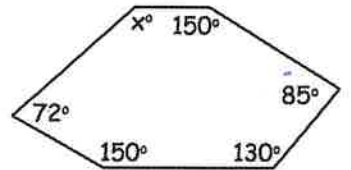
- a. altitude
- b. midsegment
- c. median
- d. perpendicular bisector

34. What is the interior angle-sum of an octagon? $(8-2)180$

- a. 1080 degrees
- b. 1440 degrees
- c. 180 degrees
- d. 135 degrees

35. What is the value of x in the polygon to the right. $(6-2)180 = 720$

- a. 150 degrees
- b. 133 degrees
- c. 143 degrees
- d. 125 degrees



$720 - 855 = 133$
557

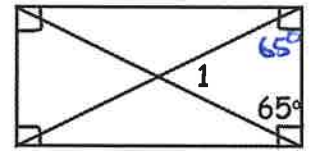
36. What is the measure of each interior angle of a regular dodecagon?

- a. 150
- b. 1800
- c. 180
- d. 144

$(12-2)180$
12

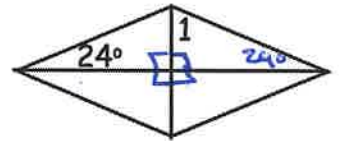
37. What is the measure of Angle 1 in the rectangle?

- a. 65 degrees
- b. 90 degrees
- c. 50 degrees
- d. 115 degrees



38. What is the measure of Angle 1 in the rhombus?

- a. 66 degrees
- b. 24 degrees
- c. 90 degrees
- d. 60 degrees



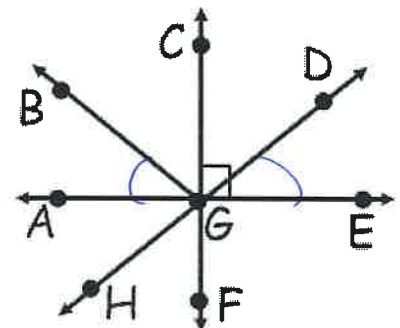
39. Which of the following quadrilaterals cannot be proven to be a parallelogram?

- a.
- b.
- c.
- d.

SHORT ANSWER QUESTIONS

40. Can you assume of this diagram that $\angle AGB$ is congruent to $\angle DGE$? Explain why or why not.

No - they are not marked congruent, no measures are given, and they aren't vertical, so we have no way to know if they are congruent



41. Use the following sentence to answer parts a and b below. **All squares are rectangles.**

a) Rewrite the sentence above as a true conditional statement.

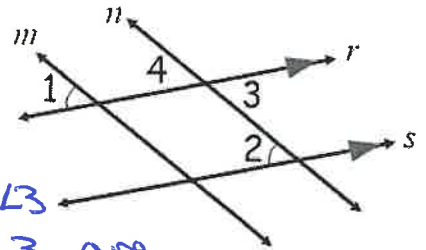
If it is a square, then it is a rectangle.

b) Is it possible to write your conditional statement from part a as a biconditional? Explain why or why not.

No - the converse of the statement is not true. Not all rectangles are squares.

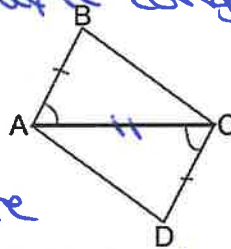
42. In the diagram, lines r and s are parallel and $\angle 1 \cong \angle 2$. Explain why lines m and n must also be parallel.

$\angle 2 \cong \angle 3$ because they are Alt. Int. Angles. Since we know $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 3$, we can assume $\angle 1 \cong \angle 3$ by Transitive Property. $\angle 1$ and $\angle 3$ are Alternate Ext. Angles. If they're congruent $m \parallel n$.



43. Explain using congruent triangles why $\angle B \cong \angle D$ in the diagram to the right.

*$\triangle ABC \cong \triangle CDA$ by SAS
So $\angle B \cong \angle D$ because they are corresponding parts of congruent triangles (CPCTC)*



PROOFS - you will get a box of choices on your test also

44. Complete the proof of the Vertical Angles Theorem. Use the justifications listed below. You can use them more than once, and you will not need all of them.

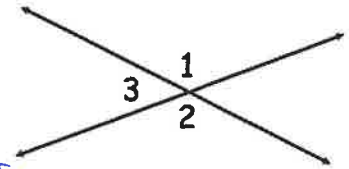
Given: $\angle 1$ and $\angle 2$ are vertical angles
Prove: $\angle 1 \cong \angle 2$

Statements

1. $\angle 1$ and $\angle 2$ are vertical angles
2. $m\angle 1 + m\angle 3 = 180$
3. $m\angle 2 + m\angle 3 = 180$
4. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$
5. $m\angle 1 = m\angle 2$
6. $\angle 1 \cong \angle 2$

Justifications

1. Given
2. Linear Pair Post.
3. Linear Pair Post.
4. Substitution Property
5. Subtraction Property
6. Def. of Congruent



Justifications (can be used more than once)

Substitution Property
Linear Pair Postulate

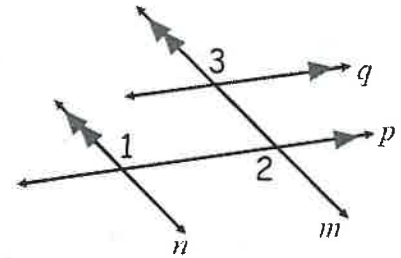
Subtraction Property
Definition of Congruence

Addition Property
Definition of Supplementary

45. Complete the proof below using the justifications in the box. You can use them more than once, and you will not need them all.

Given: $m \parallel n$ and $q \parallel p$

Prove: $\angle 1 \cong \angle 3$



| Statements | Justifications |
|----------------------------------------|--------------------------------|
| 1. $m \parallel n$ and $q \parallel p$ | 1. Given |
| 2. $\angle 1 \cong \angle 2$ | 2. Alt. Int. Theorem |
| 3. $\angle 2 \cong \angle 3$ | 3. Alt. Ext. Theorem |
| 4. $\angle 1 \cong \angle 3$ | 4. Transitive Prop. of \cong |

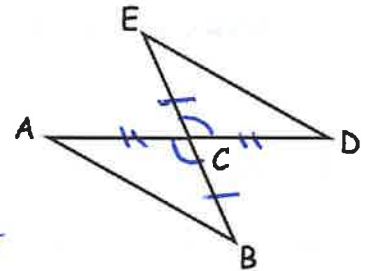
Justifications

| | |
|-----------------------------------|-----------------------------------|
| Corresponding Angles Theorem | Alternate Interior Angles Theorem |
| Transitive Property of Congruence | Reflexive Property of Congruence |
| Alternate Interior Angles Theorem | Definition of Congruent |

46. Complete the proof using the justifications in the box below. You can use them more than once, and you will not need them all.

Given: \overline{AD} and \overline{EB} bisect each other

Prove: $\triangle ABC \cong \triangle DEC$



| Statements | Justifications |
|----------------------------------------------------------|------------------------|
| 1. \overline{AD} and \overline{EB} bisect each other | 1. Given |
| 2. $\overline{EC} \cong \overline{CB}$ | 2. Def. of Bisect |
| 3. $\overline{AC} \cong \overline{CD}$ | 3. Def. of Bisect |
| 4. $\angle ACB \cong \angle DCE$ | 4. Vertical Angles Thm |
| 5. $\triangle ABC \cong \triangle DEC$ | 5. SAS |

Reasons

| | | |
|-----------------------------------|--------------------------|-----|
| Reflexive Property of Congruence | Vertical Angles Theorem | SAS |
| Transitive Property of Congruence | Definition of Congruence | AAS |
| Definition of Bisect | Congruent Angles Theorem | SSS |

47. Graph points A, B, and C, then calculate the perimeter of the polygon formed. You must show your work.

A (-3,6)

B (-3,-1)

C (4,-1)

$$AC = \sqrt{(-3-4)^2 + (6--1)^2}$$

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

$$\sqrt{49+49}$$

$$\sqrt{98}$$

$$9.9$$

$$AB = 7$$

$$BC = 7$$

Perimeter = $9.9 + 7 + 7 = 23.9$ units

