Geometry- Mrs. Tilus
Unit 2 Review

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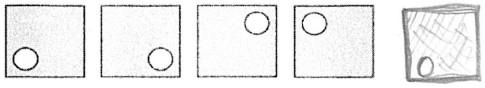
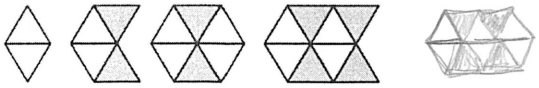
Sketch the next figure in the pattern.

1. 

2. 

Describe the pattern in the number. Write the next number.

3. 2, 4, 8, 16, 32 Mult by 2 (×2)

4. 100, -50, 25, -12.5, 6.25 Divide by -2 (÷-2)

5. -6, -1, 4, 9, 14 Add 5 (+5)

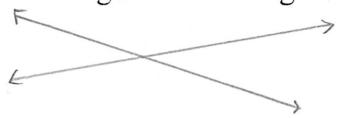
6. 17, 23, 15, 21, 13, 19, 11 Add 6, Subtract 8 (+6, -8, +6, -8, +6)

7. $1, \frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \frac{1}{81}$ Divide by 3

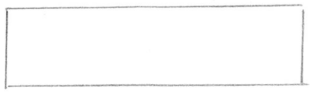
8. 2, 3, 5, 7, 11, 13, 17 Prime #'s

Show the conjecture is false by finding a counterexample.

9. All intersecting lines form right angles.

EX. 

10. All quadrilateral are equilateral ← All ≅ sides

EX. 

11. The difference of any two numbers is a value that lies between those two numbers.

Ex. $5 - (-6) = 11$ ∴ 11 is not between -6 and 5

12. The value of $2x$ is always greater than the value of x.

Ex. $x = -3 \Rightarrow 2(-3) = -6$ $-3 \not< -6$

For the given statement, write the conditional **(circle the hypothesis and underline the conclusion)**, converse, inverse and contrapositive. If possible, write a biconditional statement.

13. *All squares are four-sided regular polygons*

Write the conditional statement: If a figure is a square then it is a 4-sided regular polygon.

Write the converse: If a figure is a 4-sided regular polygon then it is a square.

Write the inverse: If a figure is not a square, then it is not a 4-sided regular polygon.

Write the contrapositive: If a figure is not a 4-sided regular polygon, then it is not a square.

If you can, write as a biconditional statement: A figure is a square iff it is a 4-sided regular polygon.

14. *Two lines that intersect form two pairs of vertical angles*

Write the conditional statement: If two lines intersect then they form two pairs of vertical angles.

Write the converse: If two lines form two pairs of vertical angles, then the two lines intersect.

Write the inverse: If two lines do NOT intersect, then they do NOT form two pair of vertical angles.

Write the contrapositive: If two lines do NOT form two pairs of vertical angles, then the two lines do NOT intersect.

If you can, write as a biconditional statement: Two lines intersect iff two pairs of vertical angles are formed.

Using the **Law of Detachment**, what statement can you make?

15. If ~~you~~ Sarah decide to go to the football game, then ~~you~~ she will miss piano lessons. Tonight, ~~you are~~ Sarah is going to the football game.

Sarah missed her piano lesson.

16. If you save \$30, you can buy a CD player. You have saved \$20.

Cannot buy a CD player.

Using the **Law of Syllogism**, what statement can you make?

17. If Ellie goes to college, then she will major in Chemistry. If Ellie majors in Chemistry, then she will need to buy a lab manual.

If Ellie goes to college, then she will need to buy a lab manual.

18. If two coplanar lines are not parallel, then they intersect. If two lines interest, then they form congruent vertical angles.

If two coplanar lines are not parallel, then they form congruent vertical angles

19. If $6x = 30$, then $x = 5$. If $6x = 30$, then $2x = 10$

If $x = 5$, then $2x = 10$

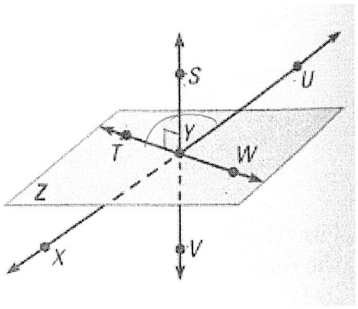
Complete the statement and name the property

20. If $m\angle JKL = m\angle GHI$ and $m\angle GHI = m\angle ABC$, then $m\angle JKL$ = $m\angle ABC$ Transitive Property

21. $m\angle XYZ =$ $m\angle XYZ$ Reflexive Property

22. If $m\angle MNO = m\angle PQR$, then $m\angle PQR =$ $m\angle MNO$ Symmetric Property

Use the diagram to determine if the statement is *true* or *false.*



23. $\overleftrightarrow{SV} \perp$ plane Z. true

24. $\overleftrightarrow{XU}$ intersect plane Z at point Y. true

25. $\overleftrightarrow{TW}$ lies in plane Z. true

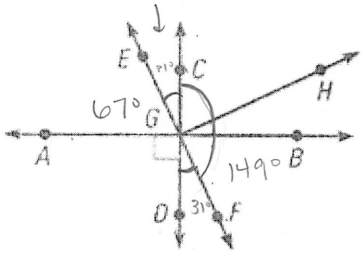
26. $\angle SYT$ and $\angle WYS$ are vertical angles. false

27. $\angle SYT$ and $\angle TYV$ are complementary angles false

28. $\angle TYU$ and $\angle UYW$ are a linear pair. true

29. $\angle UYV$ is acute false

Complete the statement using the diagram.



$90°-67=23°$

$180°-149°=31°$

30. If $m\angle CGF = 158°$, Then $m\angle EGD =$ 158° (Vertical ∠'s)

31. If $m\angle EGA = 67°$, Then $m\angle FGD =$ 23° (complementary/ Vertical)

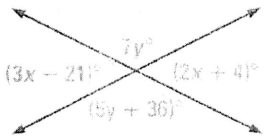
32. If $m\angle FGC = 149°$, Then $m\angle EGA =$ 59° (supp/vertical/ comp)

33. $m\angle DGB =$ 90°

34. $m\angle FGH =$ 90° (congruent complements thm)

Find x and y.

35.



$3x-21=2x+4$

$-2x \quad -2x$

$x-21=4$

$+21 \quad +21$

$x=25$

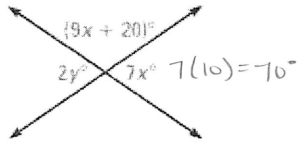
$7y=5y+36$

$-5y \quad -5y$

$\frac{2y}{2}=\frac{36}{2}$

$y=18$

36.



$7(10)=70°$

$9x+20+7x=180$

$16x+20=180$

$-20 \quad -20$

$\frac{16x}{16}=\frac{160}{16}$

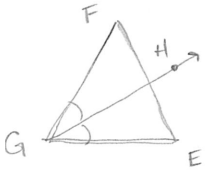
$x=10$

$\frac{2y}{2}=\frac{70}{2}$

$y=35°$

Use the given statement to name two congruent angles. The give a reason that justifies your conclusion.

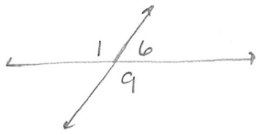
37. In triangle GFE, $\overrightarrow{GH}$ bisects $\angle EGF$



$m\angle FGH = m\angle EGH$

(Def^n of angle bisector)

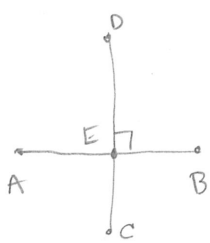
38. $\angle 1$ is a supplement of $\angle 6$ *and* $\angle 9$ is a supplement of $\angle 6$.



$m\angle 1 = m\angle 9$

(vertical angles or congruent supplements Th^m)

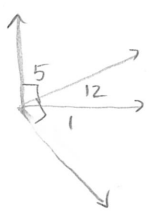
39. $\overline{AB}$ is perpendicular to $\overline{CD}$, and $\overline{AB}$ and $\overline{CD}$ Intersect at E.



$m\angle AED = m\angle DEB = m\angle BEC = m\angle CEA$

(Right Angles congruents Th^m)

40. $\angle 5$ is complementary to $\angle 12$ and $\angle 1$ is complementary to $\angle 12$



$m\angle 5 = m\angle 1$

(Congruent complements Th^m)

Solve the equation. Write a reason for each step (include substitution).

41. $9x + 31 = -23$

Statement	Reason
1. $9x + 31 = -23$	1. Given
2. $-31 \quad -31$	2. Subtraction Prop of =
3. $\frac{9x}{9} = \frac{-54}{9}$	3. Substitution Prop. of =
4.	4. Division Property of =
5. $x = -6$	5. Substitution Prop of =

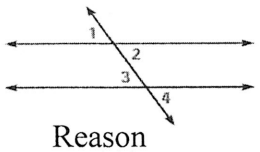
42. $\frac{n-5}{-4} = -2$

Statement	Reason
1. $\left(\frac{n-5}{-4}\right) = (-2)$	1. Given
2. $\cdot(-4) \qquad \cdot(-4)$	2. Multiplication Prop of =
3. $n - 5 = 8$	3. Substitution Prop of =
4. $+5 \quad +5$	4. Addition Prop of =
5. $n = 13$	5. Substitution Prop. of =

43. $-7(-x + 2) = 42$

Statement	Reason
1. $-7(-x + 2) = 42$	1. Given
2. $-x(-7) + 2(-7) = 42$	2. Distributive Prop.
3. $7x - 14 = 42$	3. Substitution Prop. of =
4. $+14 \quad +14$	4. Addition Prop of =
5. $\frac{7x}{7} = \frac{56}{7}$	5. Substitution Prop of =
6.	6. Division Prop of =
7. $x = 8$	7. Substitution Prop of =

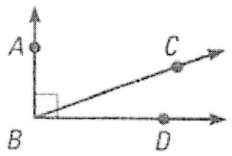
44. **Given:** $\angle 1 \cong \angle 3$
Prove: $\angle 2 \cong \angle 4$



Statement	Reason
1. $\angle 1 \cong \angle 3$	1. Given
2. $\angle 1 \cong \angle 2$	2. Vertical Angles $\cong$ Thm
3. $\angle 3 \cong \angle 4$	3. Vertical Angles $\cong$ Thm
4. $\angle 1 \cong \angle 4$	4. Transitive Prop of $\cong$
5. $\angle 2 \cong \angle 4$	5. Transitive Prop of $\cong$

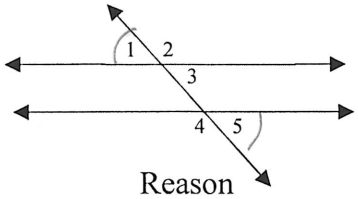
45. **Given:** Point C is in the interior of $\angle ABD$
$\angle ABD$ is a right angle.

Prove: $\angle ABC$ and $\angle CBD$ are complementary



Statement	Reason
1. ~~Point C is in the interior of $\angle ABD$~~ $\angle ABD$ is a right angle	1. Given
2. $m\angle ABD = 90°$	2. Defn of a right angle
3. Point C is in the interior of $\angle ABD$	3. Given
4. $m\angle ABD = m\angle ABC + m\angle CBD$	4. Angle Addition Postulate
5. $90° = \angle ABC + \angle CBD$	5. Substitution Prop of =
6. $\angle ABC$ and $\angle CBD$ are complementary	6. Defn of Complementary Angles

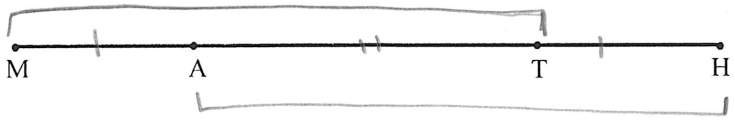
46. **Given:** $\angle 1 \cong \angle 5$
Prove: $\angle 1$ is supplementary to $\angle 4$



Statement	Reason
1. $\angle 1 \cong \angle 5$	1. Given
2. $m\angle 1 = m\angle 5$	2. Defn of congruent angles
3. $m\angle 4 + m\angle 5 = 180°$	3. Defn of Supplementary Angles
4. $m\angle 4 + m\angle 1 = 180°$	4. Substitution Prop. of =
5. $\angle 1$ is supplementary to $\angle 4$	5. Defn of supplementary Angles

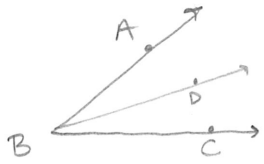
47. **Given:** $MA = TH$

Prove: $MT = AH$



Statement	Reason
1. $MA = TH$	1. Given
2. $AT = AT$	2. Reflexive Prop. of =
3. $MT = MA + AT$	3. Segment Addition Prop.
4. $MT = TH + AT$	4. Substitution Prop of =
5. $AH = TH + AT$	5. Segment Addition Prop
6. $MT = AH$	6. Transitive Prop. of =

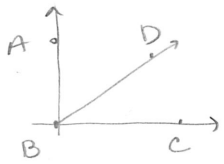
48. **Given:** $\overrightarrow{BD}$ bisects ∠ABC.
Prove: m∠ABC = 2 • m∠1
∠ ABD



Statement	Reason
1. $\overrightarrow{BD}$ bisects ∠ABC	1. Given
2. m∠ABD = m∠CBD	★ 2. Def^n of Angle Bisector
3. m∠ABC = m∠ABD + m∠CBD	3. Angle Addition Post.
4. m∠ABC = m∠ABD + m∠ABD	★ 4. Substitution Prop. of =
5. m∠ABC = 2 · m∠ABD	5. Distributive Prop / Substitution Prop of =.

49. **Given:** $\angle ABC$ is a right angle
$\overrightarrow{BD}$ is an angle bisector

Prove: $m\angle DBC = 45°$



Statement	Reason
1. ∠ABC is a right angle	1. Given
1. $\overrightarrow{BD}$ is an angle bisector	
2. m∠ABC = 90°	2. Def^n of a right angle
3. m∠DBC = 90°/2	★ 3. Def^n of an angle bisector
4. m∠DBC = 45°	4. Division Prop of = (OR) Substitution Prop of =