Geometry A
Section 3.1 – 3.3 Quiz Review

Name: Key
Date: _____ Period: _____

You should be able to...

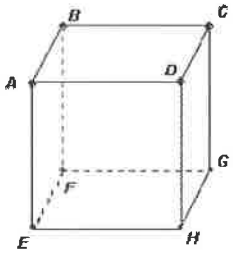
- ✓ Identify parallel, perpendicular and skew lines. Identify parallel and perpendicular planes. **(Section 3.1)**
- ✓ Identify corresponding angles, alternate interior angles, consecutive interior angles, and alternate exterior angles. **(Section 3.1)**
- ✓ Find measure of angles formed by parallel lines intersected by a transversal (Corresponding Angles Postulate, Alternate Interior Angles Theorem, Alternate Exterior Angles Theorem, Consecutive Interior Angles Theorem). **(Section 3.2)**
- ✓ Prove lines are parallel (Corresponding Angles Converse, Alternate Interior Angles Converse, Alternate Exterior Angles Converse, Consecutive Interior Angles Converse) **(Section 3.3)**

Practice Problems

1. Two lines that are not coplanar and do not intersect are called _____.

   a. Parallel b. Perpendicular (c.) Skew d. None of the above

Use the diagram of the cube to the right for questions #2 – 4 below.



2. $\overleftrightarrow{AD}$ and $\overleftrightarrow{HG}$ are _____.

   a. Parallel lines b. Perpendicular Lines (c.) Skew Lines d. None

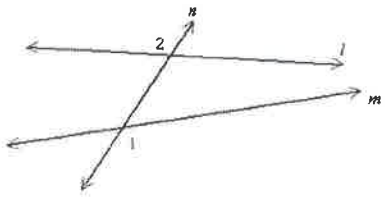
3. $\overleftrightarrow{BC}$ and $\overleftrightarrow{AB}$ are _____.

   a. Parallel lines (b.) Perpendicular Lines c. Skew Lines d. None

4. $\overleftrightarrow{FB}$ and $\overleftrightarrow{GC}$ are _____.

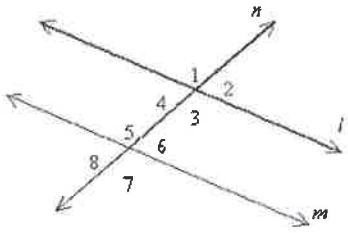
   (a.) Parallel lines b. Perpendicular Lines c. Skew Lines d. None

5. In the figure below, ∠1 and ∠2 are _____.



a. Alternate exterior angles
b. Alternate interior angles
c. Consecutive interior angles
d. Corresponding angles

Use the following figure to answer questions 18 – 19.



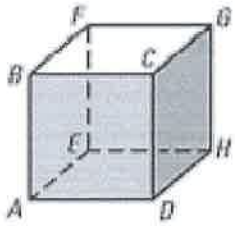
6. In the figure above, ∠6 and ∠3 are _____.

a. Alternate exterior angles
b. Consecutive interior angles
c. Corresponding angles
d. Alternate interior angles

7. In the figure above, ∠6 and ∠2 are _____.

a. Alternate interior angles
b. Consecutive interior angles
c. Alternate exterior angles
d. Corresponding angles

8. Using the diagram below, name **FOUR** pairs of perpendicular lines in the figure.

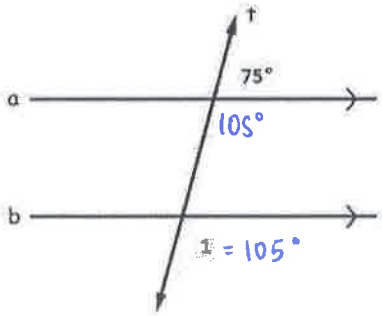


$\overleftrightarrow{BC}$ and $\overleftrightarrow{AB}$ $\overleftrightarrow{FE}$ and $\overleftrightarrow{EA}$

$\overleftrightarrow{FG}$ and $\overleftrightarrow{GH}$ $\overleftrightarrow{AD}$ and $\overleftrightarrow{DH}$

9. Find m∠1 in the figure below given that $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$.

a. 105°
b. 75°
c. 115°
d. 15°



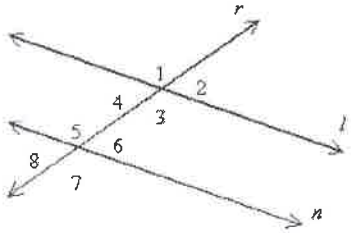
10. In the figure below, $l \parallel n$ and r is a transversal. Which of the following is ***not*** necessarily true?

a. $\angle 8 \cong \angle 2$

b. $\angle 2 \cong \angle 6$

c. $\angle 5 \cong \angle 3$

(d.) $\angle 4 \cong \angle 7$



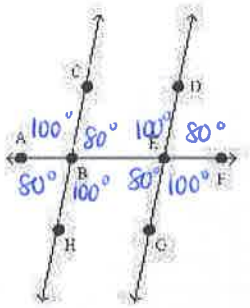
11. In the figure shown, $\overleftrightarrow{HC} \parallel \overleftrightarrow{GD}$ and m∠ ABC = 100°. Which of the following statements is false?

a. m∠ CBE = 80°

b. m∠ DEF = 80°

(c.) ∠DEB and ∠CBE are corresponding angles

d. ∠CBE and ∠GEB are alternate interior angles



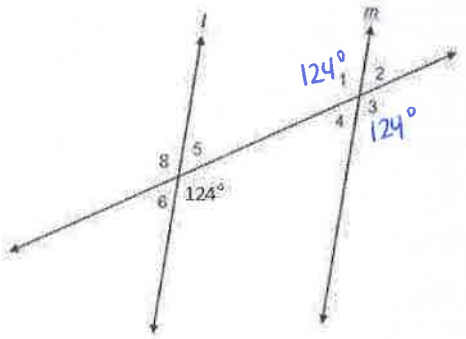
12. Use the figure to find the measure of ∠ 3.

(a.) 124°

b. 56°

c. 79°

d. 146°



13. Given $m \parallel n$, the diagram below and the provided information, please find the value of x. Justify each step using the appropriate theorem/postulate. (NOTE: Diagram may not be to scale)

a. $m\angle 4 = (7x-22)°$ and $m\angle 5 = (4x+29)°$ ↗ alternate interior angles theorem

$7x-22 = 4x+29$ → $3x = 51$

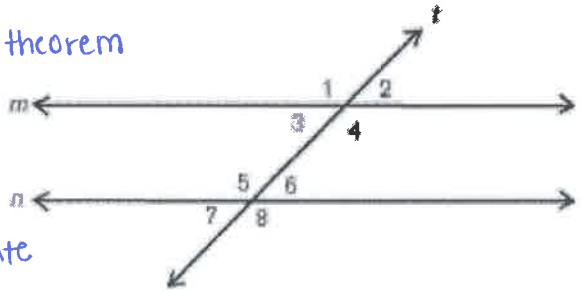
$3x-22=29$ $\boxed{x=17}$

b. $m\angle 4 = 72°$ and $m\angle 8 = (x+30)°$

↪ corresponding angles postulate

$72 = x+30$

$\boxed{x=42}$



c. If $t \perp m$ and $m\angle 2 = \left(\frac{3}{2}x+12\right)°$, what is the value of x?

$\frac{3}{2}x+12=90$ → definition of perpendicular

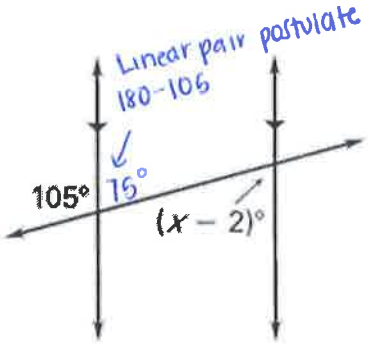
$\frac{3}{2}x = 78$

$\boxed{x=52}$

14. Given the diagram below, please find the value of x. Justify each step using the appropriate theorem/postulate.

$75 = x - 2$ alternate interior angles theorem

$\boxed{x = 77}$



15. Given the diagram below, please solve for x and y. Please justify your reasoning.

Linear pair postulate

$4y - 16 + 68 = 180$

$4y + 52 = 180$

$4y = 128$

$\boxed{y = 32}$

alternate exterior angles theorem

$4y - 16 = 2x - 24$

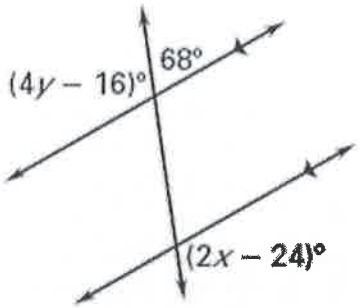
$4(32) - 16 = 2x - 24$

$128 - 16 = 2x - 24$

$112 = 2x - 24$

$136 = 2x$

$\boxed{x = 68}$



16. Please find the value of x that will make $m \parallel n$. Please justify your reasoning.

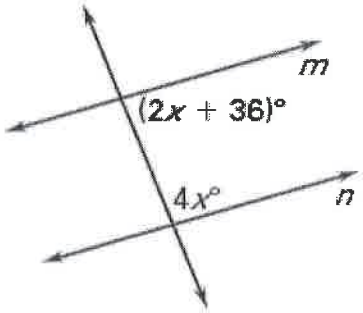
$2x + 36 + 4x = 180$

$6x + 36 = 180$

$6x = 144$

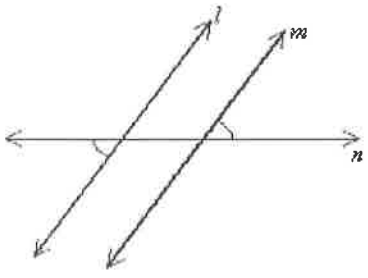
$\boxed{x = 24}$

m//n by consecutive interior angles converse



17. Using the figure below, which theorem guarantees *l* and *m* are parallel?

a. Alternate Interior Angles Converse
b. Consecutive Interior Angles Converse
c. Corresponding Angles Converse
(d.) Alternate Exterior Angles Converse

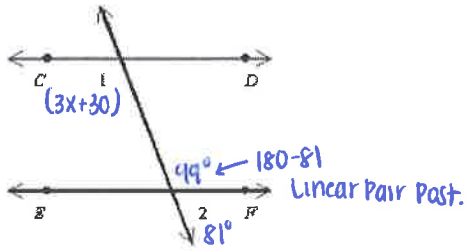


18. Find the value of x that will allow you to prove that $\overleftrightarrow{CD} \parallel \overleftrightarrow{EF}$ if m∠1 = (3x + 30)° and m∠2 = 81°. State which theorem or postulate you used for each step.

$3x+30=99$ ← alternate interior angles converse

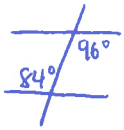
$3x=69$ ← subtraction property

$\boxed{x=23}$ ← division property

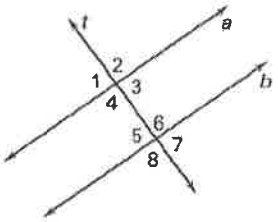


Use the following given angle measures to decide whether lines a and b are parallel. Explain.

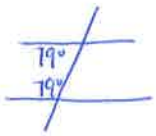
19. m∠3 = 96°, m∠5 = 84°



The lines are not parallel because ∠3 ≠ ∠5.

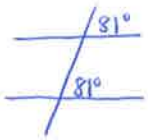


20. m∠5 = 79°, m∠4 = 79°



The lines are not parallel because ∠4 + ∠5 ≠ 180.

21. m∠2 = 81°, m∠6 = 81°

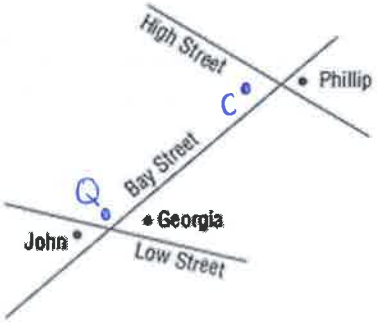


a ∥ b since corresponding angles are congruent (∠2 ≅ ∠6) by the corresponding angles converse

Use the figure below to complete #22 – 23.

22. Connor lives at the angle that forms an alternate interior angle with Georgia's residence. Add Connor to the map.

23. Quincy lives at the angle that forms a consecutive interior angle with Connor's residence. Add Quincy to the map.



True or False:

24. If two parallel lines are intersected by a transversal, then alternate exterior angles have measures of 90 degrees. False- alt. interior angles are congruent

25. If two parallel lines are intersected by a transversal, then consecutive interior angles are supplementary. True

26. If two lines are intersected by a transversal and alternate interior angles are equal in measure, then the lines are parallel. True

27. If two lines are intersected by a transversal and corresponding angles are supplementary, then the lines are parallel. False- corresponding angles are congruent

Answer Key :

1. C ✓
2. C ✓
3. B ✓
4. A ✓
5. A ✓
6. B ✓
7. D ✓
8. Sample answer: $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$, $\overleftrightarrow{AB}$ and $\overleftrightarrow{AD}$, $\overleftrightarrow{FG}$ and $\overleftrightarrow{GH}$, $\overleftrightarrow{GH}$ and $\overleftrightarrow{DH}$ ✓
9. A ✓
10. D ✓
11. C ✓
12. A ✓
13. a. x = 17, Alternate Interior Angles Theorem ✓
    b. x = 42, Corresponding Angles Postulate ✓
    c. x = 52, Definition of perpendicular ✓
14. x = 77 ✓
    Sample answer: The angle to the right of (x-2)° is 105° by the Corresponding Angles Postulate
    $105 + x - 2 = 180$ Linear Pair Postulate
15. x = 68, y = 32 ✓
    Sample answer: $4y - 16 + 68 = 180$ Linear Pair Postulate
    $4y - 16 = 2x - 24$ Alternate Exterior Angles Theorem
    (Solve for y in the first equation, substitute in to second equation and solve for x)
16. x = 24, Consecutive Interior Angles Converse ✓
17. D ✓

18. The angle next to ∠1 is also 81° because of corresponding angles.

    ∠1 + 81 = 180 because they make a linear pair (are supplementary)
    3x + 30 + 81 = 180 by substitution
    x = 23 ✓

19. Line a and line b are not parallel. ✓

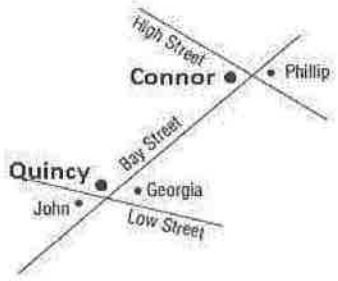
    In order to be parallel, ∠3 ≅ ∠5 by the alternate interior angles converse

20. Line a and line b are not parallel. ✓

    In order to be parallel, m∠4 + m∠5 = 180 by the consecutive interior angles converse

21. Line a and line b are parallel because ∠2 ≅ ∠6 by the corresponding angles converse ✓

22. & 23. ✓



24. False – Alternate exterior angles have to have the same measure ✓
25. True – By the consecutive interior angles converse ✓
26. True – By the alternate interior angles converse ✓
27. False – Corresponding angles must have the same measure ✓