Name Answers Date

Chapter 3 & 4 – Final Review

Identify each statement as either true (T) or false (F) by circling the correct choice.

1) T (F) The slope of a line depends on which points on the line you choose to calculate it.

2) T (F) If two parallel lines are cut by a transversal then the alternate interior angles are supplementary.

3) T (F) You can determine the slope of a segment if you are given only the coordinates of its midpoint.

4) T (F) If ~~any~~ parallel two lines are cut by a transversal then the alternate exterior angles are congruent.

5) (T) F If two lines are cut by a transversal forming pairs of congruent corresponding angles, congruent alternate interior angles, or congruent alternate exterior angles, then the lines are parallel.

6) (T) F If the graph of a line has slope q and y-intercept $(0, r)$ then the equation for the line is $y = qx + r$.

7) T (F) If lines x, y, and z are in the same plane, and $x \perp y$ and $y \perp z$, then $x \perp z$.

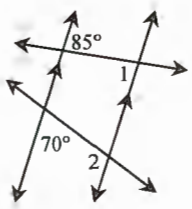
8) (T) F If two distinct lines on a graph have the same slope, then they are parallel.

9) (T) F If m is the slope of $\overline{AB}$, then the slope of the perpendicular bisector of $\overline{AB}$ is $\frac{-1}{m}$.

10) (T) F If lines x, y, and z are in the same plane, and $x \perp y$ and $y \perp z$, then $x \parallel z$.

For #11 & 12, find $m\angle 1$ and $m\angle 2$. Justify your answer with a postulate or theorem (abbreviations ok).

11)



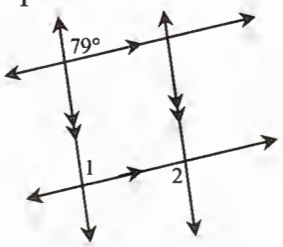
$m\angle 1 =$ 85°

Reason AIA

$m\angle 2 =$ 110°

Reason SSI

12)



$m\angle 1 =$ 79°

Reason CA

$m\angle 2 =$ 79°

Reason AIA

13) Find the midpoint of the segment connecting points (3,5) and (-1, 9).

$x_m = \frac{3+-1}{2} = 1$

$y_m = \frac{5+9}{2} = 7$

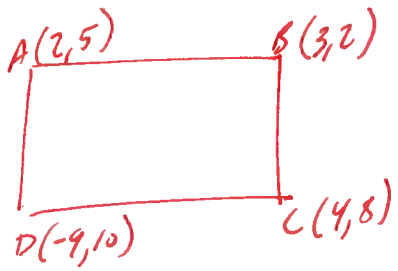
(1, 7)

14) One endpoint of $\overline{AB}$ is $A(-1, 9)$. The midpoint is $(-3, 6)$. Find the coordinates of the other endpoint.

(-5, 3)

15) In quadrilateral $ABCD$, with the given coordinates, are the diagonals perpendicular? Show work and explain your reasoning.

$A(2, 5)$
$B(3, 2)$
$C(4, 8)$
$D(-9, 10)$



$m_{\overline{AC}} = \frac{3}{2}$

$m_{\overline{BD}} = \frac{-2}{3}$

Yes, they are ⊥ because their slopes are opp. reciprocals with each other.

16) Write the equation in slope-intercept form of the line through point $B(4,7)$ and perpendicular to the line: $4x+2y=8$.

$2y = -4x + 8$

$y = -2x + 4$

$\rightarrow y = \frac{1}{2}x + b$

$7 = \frac{1}{2}(4) + b$

$7 = 2 + b$

$5 = b$

$\boxed{y = \frac{1}{2}x + 5}$

17) Write the equation in slope-intercept form of the line that is the **perpendicular bisector** of $\overline{AB}$. Show all work for full credit.

$A(9,-1)$ and $B(1,7)$

$m = \frac{7-(-1)}{1-9} = \frac{8}{-8} = -1$

$m_{\perp} = 1$

Midpoint: $\left(\frac{9+1}{2}, \frac{-1+7}{2}\right)$

$(5, 3)$

$y = 1x + b$

$3 = 1(5) + b$

$3 = 5 + b$

$-2 = b$

$\boxed{y = x - 2}$

18) What is the equation in slope-intercept form of the line parallel to $y = 2x + 3$ that contains $(4, 6)$?

$m = 2$

$y = 2x + b$

$6 = 2(4) + b$

$6 = 8 + b$

$-2 = b$

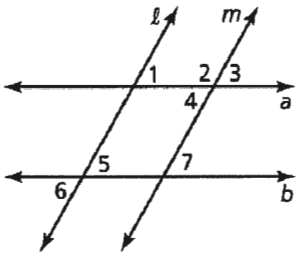
$\boxed{y = 2x - 2}$

Complete the following proof.

19) Given: $a \parallel b$

$\angle 5$ is supplementary to $\angle 2$

Prove: $l \parallel m$



Statement	Reasons
1. $a \parallel b$	Given
2. $\angle 5$ is supplementary to $\angle 2$	Given
3. $\angle 1 \cong \angle 5$	CA
4. $\angle 1$ is supplementary to $\angle 2$	Transitive Property
5. $l \parallel m$	Converse SSI

20) Solve for x and y: (4 pts)

$-8x + y = -17$ and $5x - 3y = -6$

$-8x + y = -17 \rightarrow -24x + 3y = -51$

$5x - 3y = -6 \quad 5x - 3y = -6$

$-19x = -57$

$x = 3$

$y = 7$

$(3, 7)$

Identify each statement as either true (T) or false (F) by circling the correct choice

21) (T) F A triangle with all the sides equal in measure is acute.

22) (T) F The capital letters CPCTC are an abbreviation for the phrase "corresponding parts of congruent triangles are congruent."

23) T (F) The sum of the measures of the three angles of an obtuse triangle is greater than the sum of the measures of the three angles of an acute triangle.

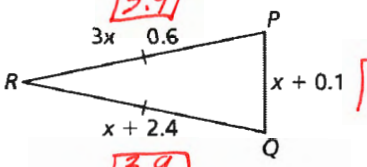
24) (T) F If the base angles of an isosceles triangle each measure 37°, then the vertex angle has a measure of 106°.

25) T (F) If a triangle has two angles of equal measure, then the third angle is obtuse.

26) T (F) If ΔDGO is congruent to ΔTRA, then $\overline{DG}$ is congruent to $\overline{TA}$.

27) T (F) The largest side of a triangle is opposite the smallest angle.

28) Find the lengths of the missing sides. SHOW WORK.!



3.9

1.6

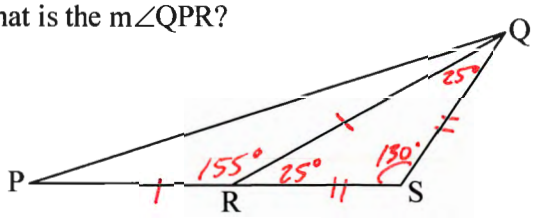
3.9

$3x - 0.6 = x + 2.4$

$2x = 3.0$

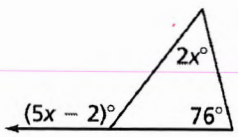
$x = 1.5$

29) PR = QR and QS=RS. If the m∠RSQ = 130°, what is the m∠QPR?



$m\angle QPR = 12.5°$

30) Find the measure of the missing variable.



$5x - 2 = 2x + 76$

$3x = 78$

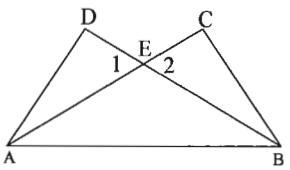
$x = 26°$

Provide each missing reason or statement in the proof.

31) Given: $\angle D \cong \angle C$

$\overline{DE} \cong \overline{EC}$

Show: $\overline{AE} \cong \overline{BE}$



Flow-chart Proof:

$\angle D \cong \angle C$ — Given

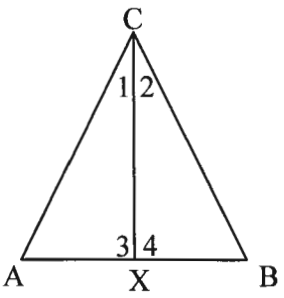
$\overline{DE} \cong \overline{EC}$ — Given

$\angle DEA \cong \angle CEB$ — VA

$\triangle DEA \cong \triangle CEB$ — ASA

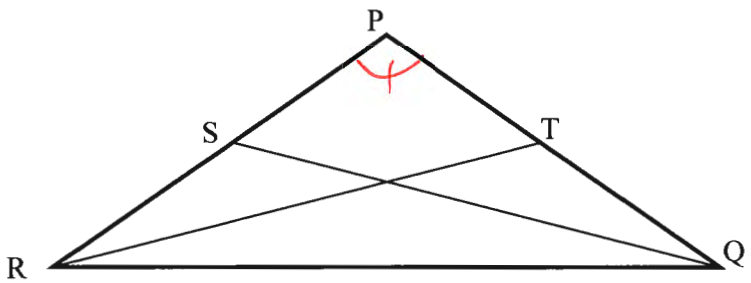
$\overline{AE} \cong \overline{BE}$ — CPCTC

32) Given: $\angle 1 \cong \angle 2$
$\angle 3 \cong \angle 4$
Prove: $\overline{AC} \cong \overline{BC}$



	Statements		Reasons
1.	$\angle 1 \cong \angle 2$	1.	Given
2.	$\angle 3 \cong \angle 4$	2.	Given
3.	$\overline{CX} \cong \overline{CX}$	3.	Reflexive Property
4.	$\Delta AXC \cong \Delta BXC$	4.	ASA
5.	$\overline{AC} \cong \overline{BC}$	5.	CPCTC

33) Write a proof.

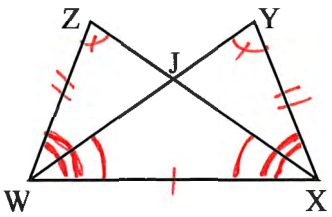


Given: $\overline{PR} \cong \overline{PQ}$
$\overline{PT} \cong \overline{PS}$

Prove: $\overline{QS} \cong \overline{RT}$

$\overline{PR} \cong \overline{PQ}$	Given
$\overline{PT} \cong \overline{PS}$	Given
$\angle RPQ \cong \angle RPQ$	Reflexive Prop.
$\Delta PTR \cong \Delta PSQ$	SAS
$\overline{QS} \cong \overline{RT}$	CPCTC

34) Given: $\angle ZWX \cong \angle YXW$, $\angle ZXW \cong \angle YWX$
Prove: $\Delta ZJW \cong \Delta YJX$



$\angle ZWX \cong \angle YXW$	Given
$\angle ZXW \cong \angle YWX$	Given
$\overline{WX} \cong \overline{WX}$	Reflexive
$\Delta ZXW \cong \Delta YWX$	ASA
$\angle Z \cong \angle Y$	CPCTC
$\overline{ZW} \cong \overline{YX}$	CPCTC
$\angle ZJW \cong \angle YJX$	VA
$\Delta ZJW \cong \Delta YJX$	AAS