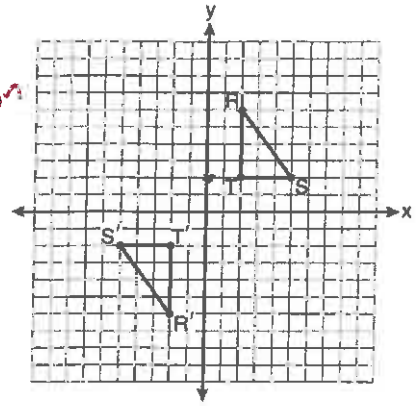
Geometry R – Mr. Bo
CC Regents Review #4

Name Key
Date 9

1. As shown on the graph below, $\triangle R'S'T'$ is the image of $\triangle RST$ under a single transformation.



Reflection + translation = glide

Which transformation does this graph represent?
1) ~~glide reflection~~ Dilation
2) line reflection
3) rotation
4) translation

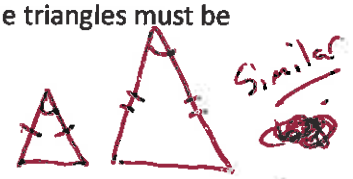
2. Which lines is parallel to the line whose equation is $4x + 3y = 7$ and also passes through the point $(-5, 2)$?
1) $4x + 3y = -26$
2) $4x + 3y = -14$
3) $3x + 4y = -7$
4) $3x + 4y = 14$

$4x + 3y = 7$
$3y = -4x + 7$
$y = -\frac{4}{3}x + \frac{7}{3}$

$4(-5) + 3(2) = -14$
$-14 = -14$ ✓

// = Same Slope

3. If the vertex angles of two isosceles triangles are congruent, then the triangles must be
1) acute
2) congruent
3) right
4) similar



Similar

4. Which quadrilateral has diagonals that always bisect its angles and also bisect each other?
1) rhombus
2) rectangle
3) parallelogram
4) isosceles trapezoid

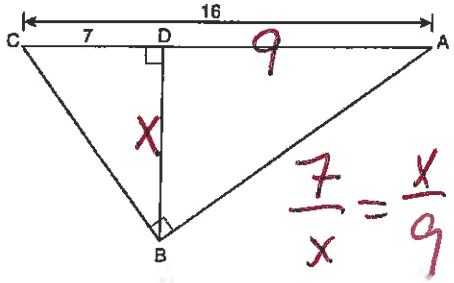
5. When $\triangle ABC$ is dilated by a scale factor of 2, its image is $\triangle A'B'C'$. Which statement is true?
1) $\overline{AC} \cong \overline{A'C'}$
2) $\angle A \cong \angle A'$
3) perimeter of $\triangle ABC$ = perimeter of $\triangle A'B'C'$
4) 2(area of $\triangle ABC$) = area of $\triangle A'B'C'$

6. What is the slope of a line that is perpendicular to the line whose equation is $3x + 5y = 4$?
1) $-\frac{3}{5}$
2) $\frac{3}{5}$
3) $-\frac{5}{3}$
4) $\frac{5}{3}$

$3x + 5y = 4$
$5y = -3x + 4$
$y = -\frac{3}{5}x + \frac{4}{5}$

$\perp$ lines = neg. reciprocal slopes.

7. In the diagram below of right triangle ABC, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $AC = 16$, and $CD = 7$.



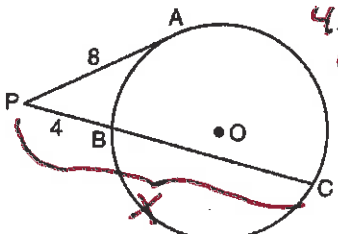
$\frac{7}{x} = \frac{x}{9}$

What is the length of $\overline{BD}$?
1) $3\sqrt{7}$
2) $4\sqrt{7}$
3) $7\sqrt{3}$
4) 12

$x^2 = 63$
$x = \sqrt{63}$
$= \sqrt{9 \cdot 7}$
$= 3\sqrt{7}$

8. In the diagram below of circle O, $\overline{PA}$ is tangent to circle O at A, and $\overline{PBC}$ is a secant with points B and C on the circle.

(Full)(out) = (Full)(out)



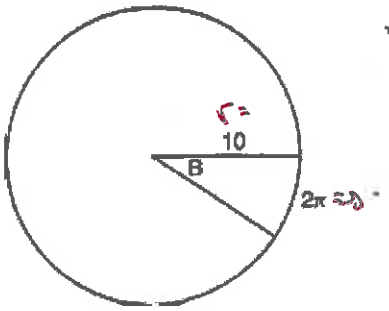
$4x = 8(8)$
$4x = 64$
$x = 16$

$BC = 16 - 4 = 12$

If $PA = 8$ and $PB = 4$, what is the length of $\overline{BC}$?
1) 20
2) 16
3) 15
4) 12

9.

In the diagram below, the circle shown has radius 10. Angle B intercepts an arc with a length of 2π.



What is the measure of angle B, in radians?

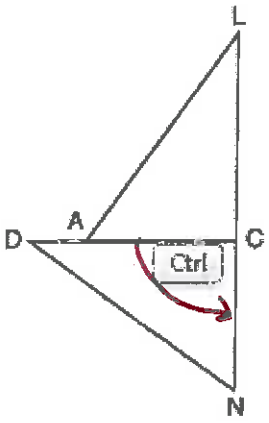
$S = r \cdot \theta$

$\frac{S}{r} = \theta$

$\theta = \frac{2\pi}{10} \approx 0.628$ radians.

10.

In the diagram of $\triangle LAC$ and $\triangle DNC$ below, $\overline{LA} \cong \overline{DN}$, $\overline{CA} \cong \overline{CN}$, and $\overline{DAC} \perp \overline{LCN}$.



a. Describe a sequence of rigid motions that will map $\triangle LAC$ onto $\triangle DNC$.

Rotate $\triangle ACL$ around center point C by an angle equal to $m\angle DCN$.

b. Prove that $\triangle LAC \cong \triangle DNC$.

S	R.
1.	1) Given
2) $\angle ACL$ Rt $\angle$. $\angle NCD$ Rt $\angle$.	2) $\perp$ lines make Rt $\angle$'s.
3) $\triangle ACL$ is Rt. $\triangle NCD$ is Rt.	3) Rt. $\triangle$ has a Rt. $\angle$.
4) $\triangle LAC \cong \triangle DNC$	4) HL.

11.

As shown below, a canoe is approaching a lighthouse on the coastline of a lake. The front of the canoe is 1.5 feet above the water and an observer in the lighthouse is 112 feet above the water.

* put calc. into Degree mode!

At 5:00, the observer in the lighthouse measured the angle of depression to the front of the canoe to be 6°. Five minutes later, the observer measured and saw the angle of depression to the front of the canoe had increased by 49°. Determine and state, to the *nearest foot per minute*, the average speed at which the canoe traveled toward the lighthouse.

(1) $\tan(55) = \frac{110.5}{x}$

$x = \frac{110.5}{\tan(55)} = 77.37$ ft.

(2) $\tan(6) = \frac{110.5}{y}$

$y = \frac{110.5}{\tan(6)} = 1051.34$ ft

(3) $z = y - x$

$= 1051 - 77$

$= 974$ ft.

(4) Avg. speed $= \frac{\text{Dist}}{\text{time}}$

$= \frac{974 \text{ ft}}{5 \text{ min}}$

$= 195$ ft/min