Geometry R – Mr. Bo
CC Regents Review - #1

Name key
Date

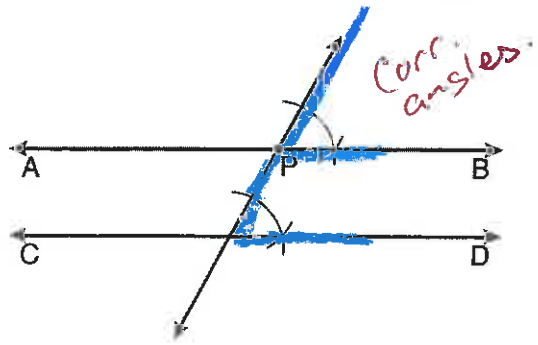
r = 7.5

1. The diameter of a sphere is 15 inches. What is the volume of the sphere, to the *nearest tenth of a cubic inch*?

1) 706.9
2) 1767.1
3) 2827.4
4) 14,137.2

$V = \frac{4}{3}\pi r^3$
$= \frac{4}{3}\pi(7.5)^3$
$= 1767.15$

2. The diagram below shows the construction of $\overleftrightarrow{AB}$ through point P parallel to $\overleftrightarrow{CD}$.



Which theorem justifies this method of construction?

1) If two lines in a plane are perpendicular to a transversal at different points, then the lines are parallel.
2) If two lines in a plane are cut by a transversal to form congruent corresponding angles, then the lines are parallel.
3) If two lines in a plane are cut by a transversal to form congruent alternate interior angles, then the lines are parallel.
4) If two lines in a plane are cut by a transversal to form congruent alternate exterior angles, then the lines are parallel.

3. Parallelogram $ABCD$ has coordinates $A(1, 5)$, $B(6, 3)$, $C(3, -1)$, and $D(-2, 1)$. What are the coordinates of E, the intersection of diagonals $\overline{AC}$ and $\overline{BD}$?

Diags bisect each other.
midpt of $\overline{AC}$

1) (2, 2)
2) (4.5, 1)
3) (3.5, 2)
4) (−1, 3)

$= \left(\frac{1+3}{2}, \frac{5+-1}{2}\right) = (2, 2)$

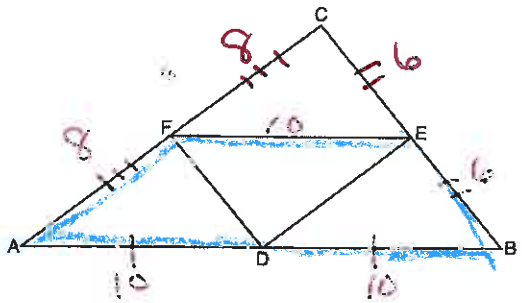
4. What is the equation of a circle whose center is 4 units above the origin in the coordinate plane and whose radius is 6?

(0,4)

$(x-0)^2+(y-4)^2=6^2$

1) $x^2 + (y-6)^2 = 16$
2) $(x-6)^2 + y^2 = 16$
3) $x^2 + (y-4)^2 = 36$
4) $(x-4)^2 + y^2 = 36$

5. In the diagram of $\triangle ABC$ shown below, D is the midpoint of $\overline{AB}$, E is the midpoint of $\overline{BC}$, and F is the midpoint of $\overline{AC}$.



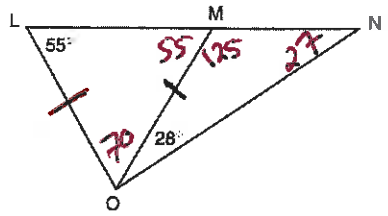
If $AB = 20$, $BC = 12$, and $AC = 16$, what is the perimeter of trapezoid $ABEF$?

FE is a median
So, $FE = \frac{1}{2}(AB)$
$= \frac{1}{2}(20) = 10$

1) 24
2) 36
3) 40
4) 44

perim = 8+6+10+10+10 = 44

6. In the diagram below, $\triangle LMO$ is isosceles with $LO = MO$.



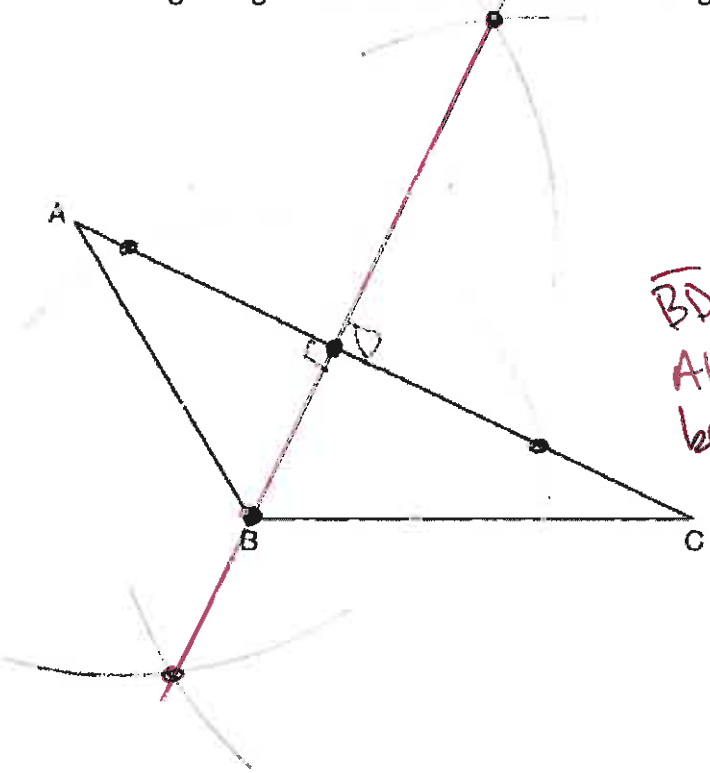
If $m\angle L = 55$ and $m\angle NOM = 28$, what is $m\angle N$?

1) 27
2) 28
3) 42
4) 70

7. If $\overleftrightarrow{AB}$ is contained in plane $\mathcal{P}$, and $\overleftrightarrow{AB}$ is perpendicular to plane $\mathcal{R}$, which statement is true?

1) $\overleftrightarrow{AB}$ is parallel to plane $\mathcal{R}$.
2) Plane $\mathcal{P}$ is parallel to plane $\mathcal{R}$.
3) $\overleftrightarrow{AB}$ is perpendicular to plane $\mathcal{P}$.
4) Plane $\mathcal{P}$ is perpendicular to plane $\mathcal{R}$.

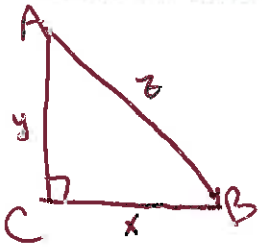
8. Use a compass and straight edge to construct an altitude of triangle ABC.



$\overline{BD}$ is an Altitude of $\triangle ABC$ because it goes from vertex B, $\perp$ to side $\overline{AC}$.

9.

In right triangle ABC with the right angle at C, $\sin A = 2x + 0.1$ and $\cos B = 4x - 0.7$. Determine and state the value of x. Explain your answer.



$\sin(A) = \frac{opp}{hyp} = \frac{x}{z}$

$\cos(B) = \frac{adj}{hyp} = \frac{x}{z}$

$\sin(A) = \cos(B)$ thus.

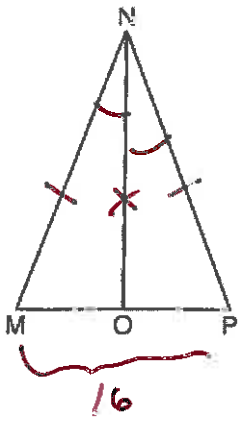
$2x + .1 = 4x - .7$

$.8 = 2x$

$x = \frac{.8}{2} = .4$

10.

In isosceles $\triangle MNP$, line segment NO bisects vertex $\angle MNP$, as shown below. If $MP = 16$, find the length of $\overline{MO}$ and explain your answer.



$\triangle MNO \cong \triangle PNO$ by SAS.

So, $\overline{MO} \cong \overline{PO}$ by CPCTC

thus $MO = \frac{16}{2} = 8$