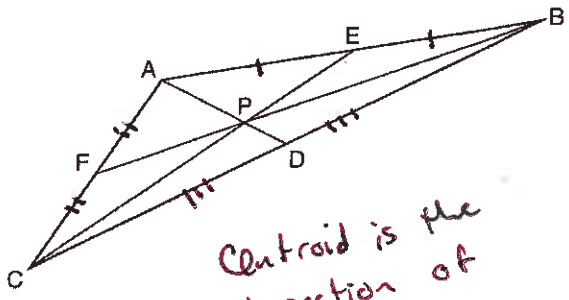
Geometry R – Mr. Bo
CC Regents Review #2

Name Key
Date

1. In the diagram below of $\triangle ABC$, $\overline{AE} \cong \overline{BE}$, $\overline{AF} \cong \overline{CF}$, and $\overline{CD} \cong \overline{BD}$.



Centroid is the intersection of the medians.

Point P must be the
1) centroid
2) circumcenter
3) incenter
4) orthocenter

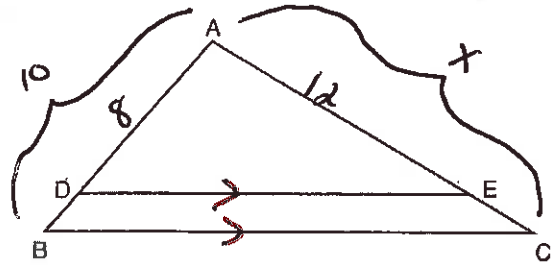
2. What is the equation of the line that passes through the point $(-9, 6)$ and is perpendicular to the line $y = 3x - 5$?

$\perp$ Slope $= -\frac{1}{3}$

1) $y = 3x + 21$
2) $y = -\frac{1}{3}x - 3$
3) $y = 3x + 33$
4) $y = -\frac{1}{3}x + 3$

$-\frac{1}{3}(-9) + 3 = 6$ ✓
(x, y)

3. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.



If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of $\overline{EC}$?
1) 6
2) 2
3) 3
4) 15

$\frac{8}{10} = \frac{12}{x}$
$8x = 120$
$x = 15$

// line cuts the side proportionally!

$EC = 15 - 12 = 3$

4. What is the length of $\overline{AB}$ with endpoints $A(-1, 0)$ and $B(4, -3)$?
1) $\sqrt{6}$
2) $\sqrt{18}$
3) $\sqrt{34}$
4) $\sqrt{50}$

$AB = \sqrt{(4 - -1)^2 + (-3 - 0)^2}$
$= \sqrt{25 + 9}$
$= \sqrt{34}$

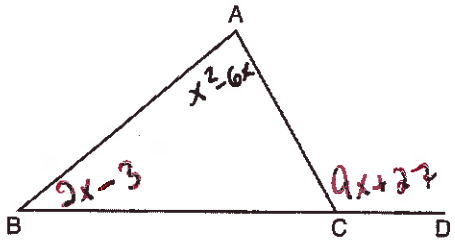
5. The sum of the interior angles of a polygon of n sides is
1) 360
2) $\frac{360}{n}$
3) $(n - 2) \cdot 180$
4) $\frac{(n - 2) \cdot 180}{n}$

6. What is the slope of a line perpendicular to the line whose equation is $20x - 2y = 6$?
1) -10
2) $\frac{1}{10}$
3) 10
4) $\frac{1}{10}$

$20x - 6 = 2y$
$10x - 3 = y$
$y = mx + b$ form!
Slope $= \frac{10}{1}$
$\perp$ Slope $= -\frac{1}{10}$

7. In the diagram below of $\triangle ABC$, $\overline{BC}$ is extended to D.

Ext. $\angle$ = Sum of Remote int. $\angle$'s.



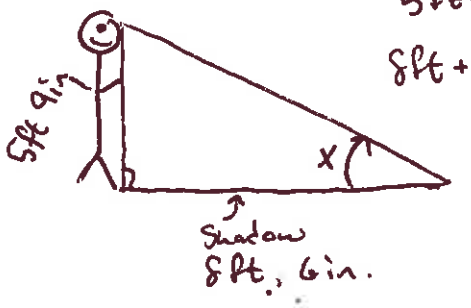
(Not drawn to scale)

If $m\angle A = x^2 - 6x$, $m\angle B = 2x - 3$, and $m\angle ACD = 9x + 27$, what is the value of x?
1) 10
2) 2
3) 3
4) 15

$9x + 27 = 2x - 3 + x^2 - 6x$
$9x + 27 = x^2 - 4x - 3$
$0 = x^2 - 13x - 30$
$0 = (x - 15)(x + 2)$
$x = 15$, $x = -2$

8.

A man who is 5 feet 9 inches tall casts a shadow of 8 feet 6 inches. Assuming that the man is standing perpendicular to the ground, what is the angle of elevation from the end of the shadow to the top of the man's head, to the *nearest tenth of a degree*?



$5\text{ft} + \frac{9}{12}\text{ft} = 5.75\text{ft}$.

$8\text{ft} + \frac{6}{12}\text{ft} = 8.5\text{ft}$

$\tan(x) = \frac{5.75}{8.5}$

$x = \tan^{-1}\left(\frac{5.75}{8.5}\right)$

use 2nd key on calculator!

Degree mode!

$x = 34.1°$

9.

A contractor needs to purchase 500 bricks. The dimensions of each brick are 5.1 cm by 10.2 cm by 20.3 cm, and the density of each brick is 1920 kg/m^3.

The maximum capacity of the contractor's trailer is 900 kg. Can the trailer hold the weight of 500 bricks? Justify your answer.

***(Hint:** 1920kg/m^3 means that 1 cubic meter of bricks weighs 1920 kilograms. Since each brick is measured in cm, you must convert the total volume of the bricks to cubic meters to find the total weight of the bricks.)*

1 Brick: $V = (0.051\text{m})(0.102\text{m})(0.203\text{m})$

$= 0.001056006\ \text{m}^3$

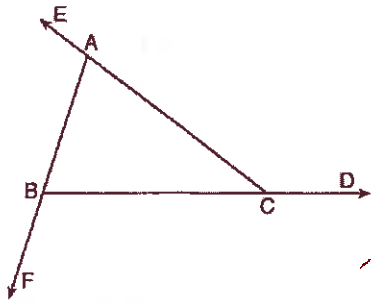
500 bricks $V = 500(0.001056006)\text{m}^3$

$= 0.528003\ \text{m}^3$

weight of 500 bricks $= \frac{1920\text{kg}}{1\text{m}^3} \cdot \frac{0.52800\ \text{m}^3}{1} = 1013.8\ \text{kg}$.

the trailer will not hold 1013.8 kgs.

10. Prove the sum of the exterior angles of a triangle is 360°.



Each pair of int. and ext. angles are supplementary.

Since there are 3 pairs, that makes $3(180°) = 540°$.

But the 3 int ∠'s add to 180°.

Thus the 3 ext. ∠'s will sum to $540° - 180° = 360°$ ✓