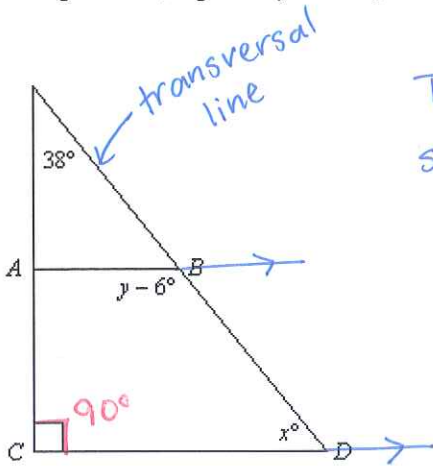


Chapter 3 Free Response Practice Test

1. In the figure, $\overline{AB} \parallel \overline{CD}$. Find x and y .

Show your work or give your reasoning.

(4 points possible, 2 points for x & y values, 2 points for reasoning in finding the values)



Total degree measure of $\triangle = 180^\circ$

so... $38^\circ + 90^\circ + x^\circ = 180^\circ$

$$\begin{array}{r} 128^\circ + x^\circ = 180^\circ \\ -128^\circ \\ \hline x^\circ = 52^\circ \end{array}$$

$x^\circ = 52^\circ$

Because $\overline{AB} \parallel \overline{CD}$, then $\angle ABD$ supplementary to $\angle BDC$.

so... $m\angle ABD + m\angle BDC = 180^\circ$

$$(y - 6^\circ) + x^\circ = 180^\circ$$

$$y - 6^\circ + 52^\circ = 180^\circ$$

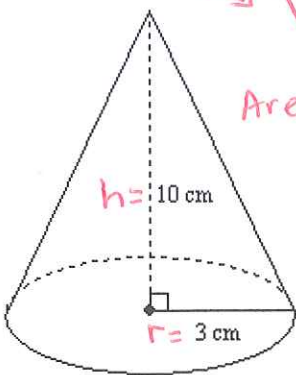
$$y + 46^\circ = 180^\circ$$

$$\begin{array}{r} y + 46^\circ = 180^\circ \\ -46^\circ \\ \hline y^\circ = 134^\circ \end{array}$$

$y^\circ = 134^\circ$

Find the volume of the solid.

2.



$V = \frac{1}{3} B \cdot h$
Area of circle = πr^2

$$V = \frac{1}{3} (\pi r^2)(h)$$

$$V = \frac{1}{3} (\pi (3)^2)(10)$$

$$V = \frac{1}{3} (9\pi)(10)$$

$$V = 30\pi \text{ cm}^3$$

$$V = 94.25 \text{ cm}^3$$

4 points possible

1) Write the formula for finding the volume of a cone

$V = \frac{1}{3} B \cdot h$

2) Find the area of the base of the cone.

$B = \pi r^2 = 9\pi = 28.3 \text{ cm}^2$

3) Put the base area and height of the cone into the volume formula, solve for volume. Remember that anything that comes to a point contains the step "divide by 3" at the end. No units given so you do not have to give units. :)

$$V = 9\pi \left(\frac{1}{3}\right)(10)$$

$$V = 30\pi \text{ cm}^3$$

4) Volume =

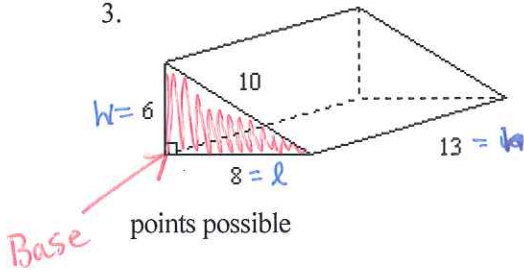
94.25 cm^3

(see above)

Chapter 3 Free Response Practice Test

3.

4



1) Write the formula for finding the volume of a prism $V = A_{\text{BASE}} \cdot h$

2) Find the area of the base of the prism: note that it is a triangle, prism is laying on it's side.

$$A_{\text{BASE}} = \frac{1}{2} (6)(8) = 24 \text{ units}^2$$

3) Put the base area and height of the prism into the volume formula, solve for volume. No units given so you do not have to give units. :)

$$\begin{aligned} V &= B \cdot h \\ V &= (24)(13) \\ V &= 312 \text{ units}^3 \end{aligned}$$

4) Volume = _____

In 2008, the circulation of a local newspaper was 1,460 papers. In 2010, the circulation was 2,110 papers.

4. Find the rate of change in the circulation over the given time period in paper circulated per year. Then write an equation in point slope form and use it to predict the circulation for 2014. (4 points possible, 1 pt each for a, b, c and 1 pt for writing units)

a) Rate of Change calculation and answer with units

$$m = \text{rate of chg} = \frac{2,110 - 1,460}{2010 - 2008} = \frac{650}{2} = 325 \text{ papers circulated per year} \quad 1 \text{ pt}$$

b) Equation in point slope form to model growth in circulation

Point: (2008, 1,460) $\rightarrow y - y_1 = m(x - x_1)$

$$y - 1,460 = 325(x - 2008) \quad 1 \text{ pt}$$

c) Prediction of circulation for 2014

$$\begin{aligned} \rightarrow x &= 2014 \\ y - 1,460 &= 325(2014 - 2008) \\ y - 1,460 &= 325(6) \\ y - 1,460 &= 1950 \\ y &= 1,460 + 1950 \\ y &= 3,410 \end{aligned}$$

Units needed!
+ 1 pt

$$y = 3,410 \text{ papers were circulated in 2014} \quad 1 \text{ pt}$$

Chapter 3 Free Response Practice Test

Find the distance between the pair of parallel lines. (6 points possible, one for each step)

5. line a: $y = 3x + 2$

line b: $y = 3x - 4$

(6 point possible, 1 pt per answer)

a) slope of parallel lines: 3

b) Slope of line perpendicular to given lines: $-\frac{1}{3}$

c) y-intercept of line a (0, 2)

d) equation of line perpendicular to line a in slope intercept form $y = -\frac{1}{3}x + 2$

$$y - 2 = -\frac{1}{3}(x - 0)$$

$$y - 2 = -\frac{1}{3}x$$

$$y = -\frac{1}{3}x + 2$$

$y = mx + b$

e) Solve system of equations to find a point through line b on perpendicular line

$$3\left(-\frac{1}{3}x + 2\right) = (3x - 4) \cdot 3$$

$$-x + 6 = 9x - 12$$

$$6 = 10x - 12$$

$y = 3x - 4$

$$6 = 10x - 12$$

$$+12 \quad +12$$

$$\frac{18}{10} = \frac{10x}{10}$$

$$\frac{9}{5} = x$$

substitute

$$y = 3x - 4$$

$$y = 3\left(\frac{9}{5}\right) - 4 \cdot \frac{5}{5}$$

$$y = \frac{27}{5} - \frac{20}{5}$$

$$y = \frac{7}{5}$$

f) Use points of intersection for line a and the perpendicular line & line b and the perpendicular line to find the shortest distance between the two parallel lines

$$d = \sqrt{\left(\frac{7}{5} - 2\right)^2 + \left(\frac{9}{5} - 0\right)^2}$$

$$d = \sqrt{\left(-\frac{3}{5}\right)^2 + \left(\frac{9}{5}\right)^2}$$

$$d = \sqrt{\frac{9}{25} + \frac{81}{25}}$$

$$d = \sqrt{\frac{90}{25}} = \frac{3\sqrt{10}}{5} \approx 1.90$$

$\left(\frac{9}{5}, \frac{7}{5}\right)$

or answer to e
 $(1.8, 1.4)$

distance = _____

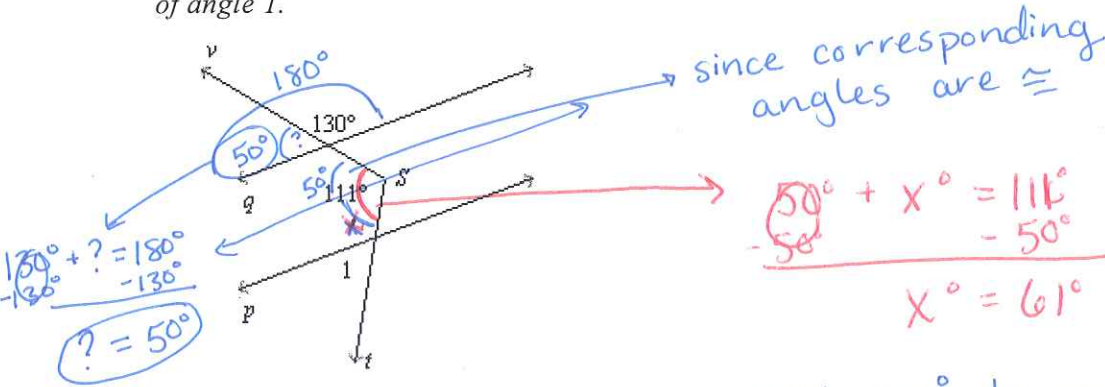
* Note: you may use decimals if you would like to on the test Monday ;

Chapter 3 Free Response Practice Test

6. In the figure, $p \parallel q$. Find $m\angle 1$.
 found)

(4 points possible, 1 per relevant angle measure found)

Hint: Draw another parallel line through angle S and extend transversals as needed. Then use what you know about parallel lines, transversals, vertical lines, and triangle angle measures to determine the measure of angle 1.



$m\angle 1 = x^\circ$ by corresponding angles

so... $m\angle 1 = 61^\circ$