

Regional Test  
2010 - 2011

11. 
$$\frac{[[[(6)(5.69)](1.0825)](1.15)]}{6} = \$7.08$$

12. 
$$(82,458)(25) = 2,061,450$$

13. 
$$\sqrt[5]{\ln 243!} = 4.05$$

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24. 
$$\frac{22 \text{ ml}}{1 \text{ sec}} \times \frac{3600 \text{ sec}}{1 \text{ hr}} \times \frac{24 \text{ hr}}{1 \text{ day}} \times \frac{1 \text{ l}}{1000 \text{ ml}} = 1900.8 \text{ liters}$$
  
Use liter to gallon conversion key  
502 gal

25. 
$$\begin{aligned} \text{Diagonals in a polygon} &= \frac{n(n-3)}{2} \\ &= \frac{28(28-3)}{2} \\ &= \frac{28(25)}{2} \\ &= 350 \end{aligned}$$

26. 
$$\begin{aligned} 4(x+14) &= 2(-x) + 67 \\ 4x + 56 &= -2x + 67 \\ 6x &= 11 \\ x &= 1.83 \end{aligned}$$

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35. 11.8 *Enter*  
36.2 (*%CHG key*)  
*Ans : 207*

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36.

$$\begin{aligned}P &= 2(L + W) \\ &= 2(2W + W) \\ &= 6W \\ 6W &= P \\ W &= \frac{P}{6} \\ W &= \frac{522}{6} \\ W &= 87 \\ L &= 174\end{aligned}$$

$$\begin{aligned}A &= LW \\ &= (174)(87) \\ &= 15100\end{aligned}$$

37.

$$\begin{aligned}P &= r + r + \frac{C}{8} \\ &= 2330 + 2330 + \frac{2\pi r}{8} \\ &= 2330 + 2330 + \frac{2\pi(2330)}{8} \\ &= 6490\end{aligned}$$

38.

$$\begin{aligned}A &= \frac{d_1 d_2}{2} \\ 2A &= d_1 d_2 \\ \frac{2A}{d_2} &= d_1 \\ d_1 &= \frac{2(44.83)}{5.86} \\ d_1 &= 15.3\end{aligned}$$

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47.

$$\begin{aligned}(\ln 567)^{3772} &= \log(\ln 567)^{3772} \\ &= 3772 \log(\ln 567) \\ &= 3025.57351667\dots\end{aligned}$$

Write in answer blank, x  $10^{3025}$   
Subtract 3025 from display  
Hit  $10^x$  key and write in answer blank  $3.75 \times 10^{3025}$

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48.

$$\frac{d}{s^2}$$

$$\frac{325 \text{ ft}}{(72 \text{ mph})^2} = \frac{550 \text{ ft}}{(x \text{ mph})^2}$$

$$325x^2 = (72)^2(550)$$

$$x = \sqrt{\frac{(72)^2(550)}{325}}$$

$$x = 93.7$$

49.

$$P = \frac{2007}{2405} + \frac{223}{325} + \sqrt{\left(\frac{2007}{2405}\right)^2 - \left(\frac{223}{325}\right)^2}$$

$$= 2.00$$

50. Place calculator in radian mode

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\theta = \sin^{-1} \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\theta = \sin^{-1} \frac{44\pi}{202\pi}$$

$$\theta = \sin^{-1} \frac{44}{202}$$

$$\theta = .220$$

Place calculator in degree mode

59.

$$t_1 + t_2 = 2.5 \text{ hr}$$

$$t_2 = 2.5 - t_1$$

$$d_1 = r_1 t_1$$

$$d_2 = r_2 t_2$$

$$d_1 = d_2$$

$$r_1 t_1 = r_2 t_2$$

$$(15)(t_1) = (30)(2.5 - t_1)$$

$$15t_1 = 75 - 30t_1$$

$$45t_1 = 75$$

$$t_1 = 1.67$$

$$d_1 = r_1 t_1$$

$$= (15)(1.67)$$

$$= 25.0$$

60.

$$(120 \text{ l})(87\%) = (120 \text{ l} + x)(25\%)$$

$$(120)(.87) = (120)(.25) + .25x$$

$$.25x + 30 = 104.4$$

$$x = \frac{104.4 - 30}{.25}$$

$$x = 298$$

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61.  $SA = A_{\text{Rectangle}} - A_{\text{3 Rhombi}}$

$$= LW - 3\left(\frac{d_1 d_2}{2}\right)$$

$$= (1005)(528) - \left[ 3 \left( \frac{(1005)\left(\frac{528}{3}\right)}{2} \right) \right]$$

$$= 2.65 \times 10^5$$

62.

$$h = \frac{s}{2}\sqrt{3}$$

$$= \frac{2330}{2}\sqrt{3}$$

$$= 2020$$

71.

$$-3x - 8y = 32$$

$$-8y = 3x + 32$$

$$8y = -3x - 32$$

$$y = -\frac{3}{8}x - 4$$

$$m = -\frac{3}{8}$$

m of line perpendicular is  $\frac{8}{3} = 2.67$

72.  $(3+3)(8)(5) = 240$

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73.

$$TSA = \pi r^2 + \pi r l$$

$$\pi r l = TSA - \pi r^2$$

$$l = \frac{TSA - \pi r^2}{\pi r}$$

$$= \frac{10129 - \pi(32.8)^2}{\pi(32.8)}$$

$$= 65.5$$

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74.

Law of Sines

$$\frac{a}{\sin a} = \frac{b}{\sin b}$$

$$\frac{2229}{\sin 113} = \frac{b}{\sin 27}$$

$$(\sin 113)(b) = (\sin 27)(2229)$$

$$b = \frac{(\sin 27)(2229)}{(\sin 113)}$$

$$b = 1100$$