

Test #11 - TMSCA Calculator - 2013-2014

11. The average of the first twenty was 297 lbs. Five got through without being weighed. The last twenty-five averaged 312 lbs. The overall average of the fifty was assumed to be 303.03 lbs. What was the assumed average of the 5 that got through without being weighed?

$$20(297) + 5x + 25(312) = 50(303.03)$$

$$5x = 50(303.03) - [(20)(297) + (25)(312)]$$

$$x = \frac{50(303.03) - [(20)(297) + (25)(312)]}{5}$$

$$x = 282$$

12. A circle is 360° . What is this value in radians?

$$C = 2\pi r$$

$$360^\circ = 2(\pi) \text{ radians}$$

$$\text{Number of radians} = 6.28$$

13. Find the slope of the line passing through the points $(-2, 8)$ and $(-5, -7)$ on a coordinate plane?

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$(x_1, y_1) = (-5, -7)$$

$$(x_2, y_2) = (-2, 8)$$

$$\text{Slope} = \frac{8 - (-7)}{-2 - (-5)}$$

$$= \frac{15}{3}$$

$$= 5.00$$

24. Pi is to e as 99 is to what number?

$$\frac{\pi}{e} = \frac{99}{x}$$

$$\pi x = 99e$$

$$x = \frac{99e}{\pi}$$

$$x = 85.7$$

25. An I-Pad with Retina display cost \$576.36 including tax. If the tax rate is 8.75%, what was the cost before tax?

$$x(1.0875) = 576.36$$

$$x = \frac{576.36}{1.0875}$$

$$x = \$529.99$$

26. A number divided by twelve and multiplied by thirty-three is equal to the number less fifty-one. What is the number?

$$\frac{x}{12}(33) = x - 51$$

$$\frac{33x}{12} = x - 51$$

$$33x = 12(x - 51)$$

$$33x = 12x - [(12)(51)]$$

$$21x = -(12)(51)$$

$$x = \frac{-(12)(51)}{21}$$

$$x = -29.1$$

35. The driving distance from Corpus Christi to Wichita Falls is 481 miles. Strime makes the trip in 7 hours and 22 minutes. Calculate his speed in miles per hour.

$$d = rt$$

$$r = \frac{d}{t}$$

$$r = \frac{481 \text{ miles}}{7 \frac{22}{60} \text{ hours}}$$

$$r = 65.3 \text{ mph}$$

36. Calculate $-(-2758)$
 -2752

$$\text{Ans: } -3.05 \times 10^{-9468}$$

37. $A = LW$

$$A = (2.15)(.72)$$

$$A = 1.55$$

$$P = 2W + 2L$$

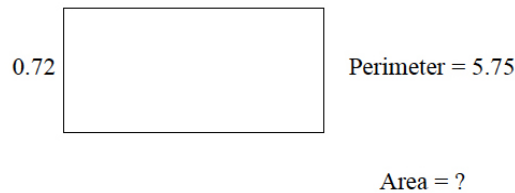
$$2L = P - 2W$$

$$L = \frac{P - 2W}{2}$$

$$L = \frac{5.75 - 2(.72)}{2}$$

$$L = 2.15$$

RECTANGLE



38. $A = \frac{d_1 d_2}{2}$

$$2A = d_1 d_2$$

$$2A = (2x)(4x)$$

$$2A = 8x^2$$

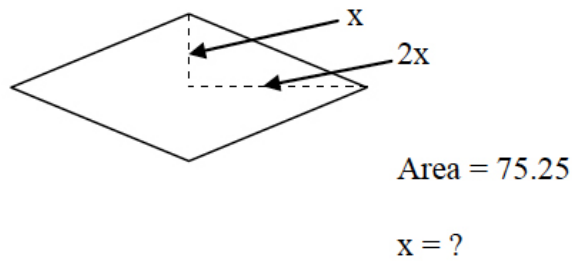
$$\frac{2A}{8} = x^2$$

$$x = \sqrt{\frac{2A}{8}}$$

$$x = \sqrt{\frac{2(75.25)}{8}}$$

$$x = 4.34$$

RHOMBUS



47. What is the measure of an angle that is 22 degrees less than one quarter of its' complement?

$$x = \frac{1}{4}(90 - x) - 22$$

$$x = (.25)(90 - x) - 22$$

$$x = [(.25)(90) - (.25)(x)] - 22$$

$$x = [(.25)(90) - (.25x)] - 22$$

$$x = \frac{90}{4} - .25x - 22$$

$$1.25x = \frac{90}{4} - 22$$

$$x = \frac{\left(\frac{90}{4} - 22\right)}{1.25}$$

$$x = .400$$

48. Tank A holds 17% less than Tank B and Tank B holds 42% less than Tank C. Tank A holds what percent less than Tank C?

$$100\% = \text{Tank C}$$

$$58\% = \text{Tank B holds 58\% of Tank C}$$

$$83\% = \text{Tank A holds 83\% of Tank B}$$

Therefore,

$$(.83)(.58) = \text{Tank A holds 48.1\% of Tank C}$$

$$100\% - 48.1\% = 51.9\% \text{ less than Tank C}$$

$$49. \quad \left(\frac{x}{6}\right)^2 + x^2 = 17.81^2$$

$$\frac{x^2}{36} + \left(\frac{x^2}{1}\right) = 17.81^2$$

$$\frac{x^2}{36} + \left(\frac{36x^2}{36}\right) = 17.81^2$$

$$\frac{37x^2}{36} = 17.81^2$$

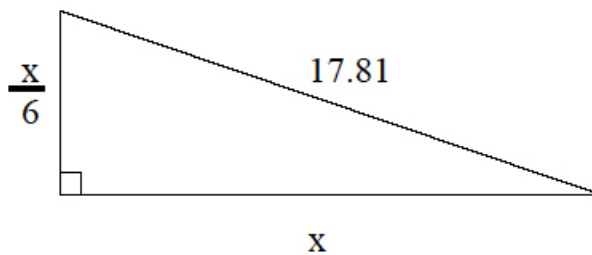
$$37x^2 = (36)(17.81^2)$$

$$x^2 = \frac{(36)(17.81^2)}{37}$$

$$x = \sqrt{\frac{(36)(17.81^2)}{37}}$$

$$x = 17.6$$

RIGHT TRIANGLE



$$x = ?$$

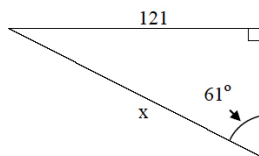
$$50. \quad \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\frac{\sin 61^\circ}{1} = \frac{121}{x}$$

$$\frac{x}{1} = \frac{121}{\sin 61^\circ}$$

$$x = 138$$

RIGHT TRIANGLE



$$x = ?$$

59. Jimmy and John drive from college 315 miles in 4 hours and 20 minutes. Jimmy drove part way at 60 mph and John drove the other part at 75 mph. How long did John drive?

	d =	r	t
Jimmy	d	60	t
John	315 - d	75	(4 20/60 - t)

$$d = 60t$$

$$315 - d = 75\left(4\frac{20}{60} - t\right)$$

These 2 equations when added together :

$$315 = 60t + 75\left(4\frac{20}{60} - t\right)$$

$$315 = 60t + (75)\left(4\frac{20}{60}\right) - 75t$$

Solve for t :

$$315 = 60t + 325 - 75t$$

$$75t - 60t = 325 - 315$$

$$15t = 10$$

$$t = \frac{10}{15} = \frac{2}{3}$$

$$4\frac{20}{60} - \frac{2}{3} = 3.67 \text{ hours}$$

60. Alexis and her father are on a balanced teeter-totter. Alexis weighs 71 lbs. and sits 6 ft. away from the pivot point. If her father sits 2.5 ft. away from the pivot point, how much does her father weigh?

$$m_1 d_1 = m_2 d_2$$

$$(71)(6) = (m)(2.5)$$

$$m = \frac{(71)(6)}{2.5}$$

$$m = 170$$

61. $(x+11)^\circ + (3x+4.8)^\circ = 180^\circ$

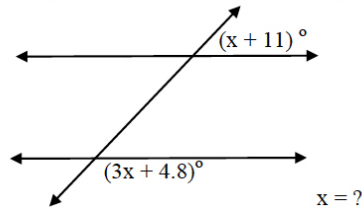
$$x + 11 + 3x + 4.8 = 180$$

$$4x = 180 - 4.8 - 11$$

$$x = \frac{180 - 4.8 - 11}{4}$$

$$x = 41.1$$

PARALLEL LINES CUT BY A TRANSVERSAL



62. $C = 2\pi r$ $V_{\text{sphere}} = \frac{4}{3}\pi r^3$

$$r = \frac{C}{2\pi}$$

$$V_{\text{hemisphere}} = \frac{2}{3}\pi r^3$$

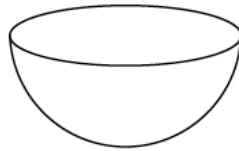
$$V_{\text{hemisphere}} = \left(\frac{2}{3}\right)(\pi)\left(\frac{C}{2\pi}\right)^3$$

$$V_{\text{hemisphere}} = \left(\frac{2}{3}\right)(\pi)\left(\frac{.0058}{2\pi}\right)^3$$

$$V_{\text{hemisphere}} = 1.65 \times 10^{-9}$$

HEMISPHERE

Circumference of Great Circle = 0.0058



Volume = ?

71. What is the probability of rolling a pair of standard six sided dice and getting a sum greater than 7?

$$P(\text{sum} > 7) = \frac{15}{36}$$

$$= .417$$

72. What is the area of a regular undecagon with each side measuring 6.1 in. and an apothem that measures 10.38735 in.?

Undecagon = 11 sides

$$A = \frac{nb^2}{4 \tan\left(\frac{\pi}{n}\right)}$$

$$A = \frac{(11)(6.1^2)}{4 \tan\left(\frac{\pi}{11}\right)}$$

$$A = 348$$

p = perimeter

a = apothem

$$A = \left(\frac{1}{2}\right)pa = \frac{pa}{2}$$

$$A = \left(\frac{1}{2}\right)[(11)(6.1)](10.38735)$$

$$A = 348$$

73. $SA = A_{\text{circle}} - A_{\text{equilateral triangles}}$

$$SA = 10203 - (4)\frac{s^2\sqrt{3}}{4}$$

$$SA = 10203 - (4)\left(\frac{57^2\sqrt{3}}{4}\right)$$

$$SA = 4580$$

$$A = \pi r^2$$

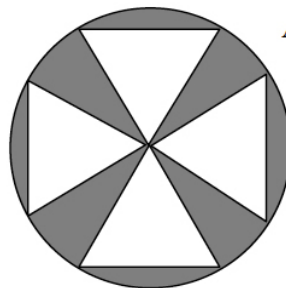
$$r = \sqrt{\frac{A}{\pi}}$$

$$r = \sqrt{\frac{10203}{\pi}}$$

$$r = 57.0$$

CIRCLE AND EQUILATERAL TRIANGLES

Area of Circle = 10203



Shaded Area = ?

74. $V = Bh$

$$B = \frac{V}{h}$$

$$B = \frac{.01015}{.09015}$$

Place calculator into radian mode

$$A_{Base} = \frac{nb^2}{4 \tan\left(\frac{\pi}{n}\right)}$$

Solve for b,

$$A \left[4 \tan\left(\frac{\pi}{n}\right) \right] = nb^2$$

$$nb^2 = A \left[4 \tan\left(\frac{\pi}{n}\right) \right]$$

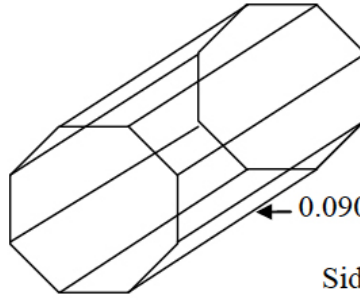
$$b = \sqrt{\frac{A \left[4 \tan\left(\frac{\pi}{n}\right) \right]}{n}}$$

$$b = \sqrt{\frac{\left(\frac{.01015}{.09015}\right) \left[4 \tan\left(\frac{\pi}{8}\right) \right]}{8}}$$

$$b = .153$$

OCTAGONAL PRISM

Volume = 0.01015



Side of Octagon = ?