

Test #5 - TMSCA Calculator - 2013-2014

11. What is the range of the set that contains the first ten prime numbers?

$$2,3,5,7,11,13,17,19,23,29 = \text{Prime numbers}$$

$$\text{Range} = 29 - 2 = 27.0$$

12. What is the area of a square with a side that measures two hundred fifty-seven meters?

$$A = s^2$$

$$= (257)^2$$

$$= 66000$$

13. What number is one hundred twenty-three percent of one thousand one hundred eleven?

$$(123\%)(1111) = 1370$$

24. Set A has 85 elements and Set B has 422 elements. What is the Cartesian product of these two sets?

$$(85)(422) = 35870$$

25. A box of donuts has 5 glazed, 2 chocolate and 6 twists. If a total of 286 of these donuts were purchased, how many would be twists?

$$\frac{5}{13} \quad \frac{2}{13} \quad \frac{6}{13}$$

$$\left(\frac{6}{13}\right)(286) = 132$$

26. The rectangular playground at school is three times as long as it is wide. The area of the playground is 272 square meters. What is the perimeter of the playground?

$$A = LW \quad P = 8x$$

$$A = (3x)(x) \quad P = (8)(9.52)$$

$$A = 3x^2 \quad P = 76.2$$

$$3x^2 = A$$

$$3x^2 = 272$$

$$x = \sqrt{\frac{272}{3}}$$

$$x = 9.52$$

35. What would be the cost of a half-pound of platinum at \$4.00 per gram?

Use conversion key on calculator

$$(.5 \text{ lb})(\text{conversion key})(1000 \text{ g} / 1 \text{ kg}) = 227 \text{ grams}$$

$$(\$4.00)(227 \text{ g}) = \$907.18$$

36. 210321 Base 5 has what value in Base 10?

$$210321_5 =$$

$$(1 \times 5^0) +$$

$$(2 \times 5^1) +$$

$$(3 \times 5^2) +$$

$$(0 \times 5^3) +$$

$$(1 \times 5^4) +$$

$$(2 \times 5^5)$$

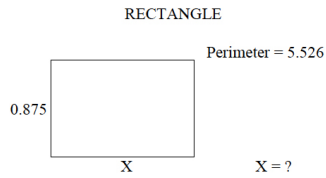
$$= 6961_{10}$$

37. $P = 2L + 2W$

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

$$L = \frac{5.526 - 2(.875)}{2}$$

$$L = 1.89$$

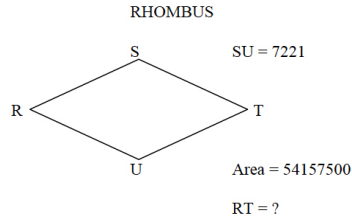


38. $A = \frac{d_1 d_2}{2}$

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

$$d_1 = \frac{2(54157500)}{7221}$$

$$d_1 = 15000$$



47. A person jogged 10 times along the perimeter of a rectangular field at the rate of 12 km per hour for 30 minutes. If the field has a length that is twice its width, find the area of the field in square meters.

He covered 6 km in that 30 minutes which is 6000 meters.

Since he went around the field 10 times, that means the perimeter is 600 meters.

The length is $2x$ and the width is x , the perimeter is $6x$.

That means that $x = 100$ meters; therefore the width = 100 m and the length = 200 m.

$$A = L W$$

$$A = (200)(100)$$

$$A = 20000$$

48. What is the sum of the interior angles of an undecagon?

Undecagon = 11 sides

sum of exterior angles = 360

$$1 \text{ exterior angle} = \frac{360}{11}$$

$$1 \text{ interior angle} = 180 - \frac{360}{11}$$

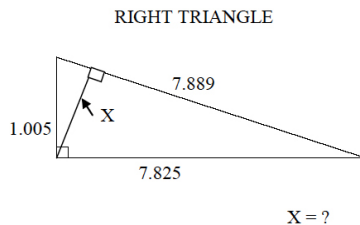
$$\begin{aligned} \text{Sum of interior angles} &= \left(180 - \frac{360}{11}\right)(11) \\ &= 1620 \end{aligned}$$

49. Similar Triangles

$$\frac{1.005}{x} = \frac{7.889}{7.825}$$

$$x = \frac{(1.005)(7.889)}{7.825}$$

$$x = .997$$

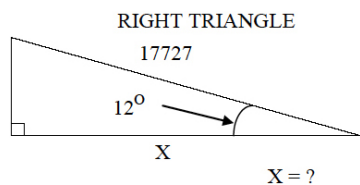


50. $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

$$\frac{\cos 12}{1} = \frac{x}{17727}$$

$$x = (\cos 12)(17727)$$

$$x = 17300$$



59. What is the distance between the two points (-5, 8) and (12, 2)?

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(12 - (-5))^2 + (2 - 8)^2}$$

$$d = \sqrt{(12 - (-5))^2 + (2 - 8)^2}$$

$$d = 18.0$$

60. How many ml of a 38% acid solution must be added to 200 ml of an 88% acid solution to create a 55% acid solution?

$$(x)(38\%) + (200)(88\%) = (x + 200)(55\%)$$

$$(.38x) + 176 = (.55x) + 110$$

$$(.55x) - (.38x) = 176 - 110$$

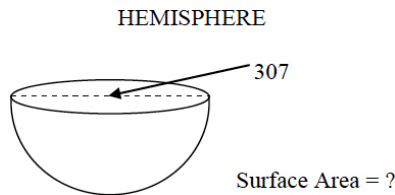
$$.17x = 66$$

$$x = 388$$

61. $SA = 3\pi r^2$

$$SA = 3\pi \left(\frac{307}{2}\right)^2$$

$$SA = 222000$$



62. Law of Sines

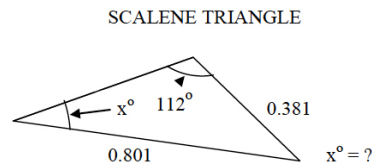
$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{.381}{\sin x} = \frac{.801}{\sin 112}$$

$$\sin x = \frac{(.381)(\sin 112)}{.801}$$

$$x = \sin^{-1} \left(\frac{(.381)(\sin 112)}{.801} \right)$$

$$x = 26.2$$



71. What are the odds of not drawing a King from a standard deck of playing cards?

$$\begin{aligned} \text{Odds (not drawing a King)} &= \frac{48}{4} \\ &= 12.0 \end{aligned}$$

72. A committee is made up of one person from each of the fifty states. If each person shakes hands with all the other committee members once, how many handshakes will there be in all?

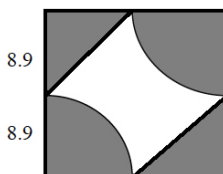
$$\begin{aligned} \frac{n!}{r!(n-r)!} &= \frac{50!}{2!(50-2)!} \\ &= 1225 \text{ int} \end{aligned}$$

73. Unshaded Area = $A_{\text{large square}} - A_{\text{small square}} - A_{\text{semi-circle}}$

$$= (8.9 + 8.9)^2 - 8.9^2 - \frac{\pi(8.9^2)}{2}$$

$$= 113$$

SQUARE, CONGRUENT QUARTER CIRCLES,
CONGRUENT RIGHT ISOSCELES TRIANGLES



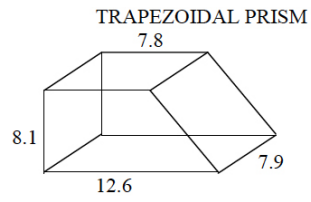
Unshaded Area = ?

74. $V = (\text{Base Area})L$

$$V = \left(\frac{h(b_1 + b_2)}{2} \right) (L)$$

$$V = \left(\frac{8.1(7.8 + 12.6)}{2} \right) (7.9)$$

$$V = 653$$



Volume = ?