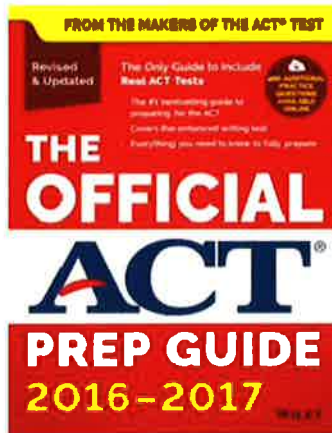


ACT MATH SOLUTIONS

Practice test #1

From the Official ACT Prep Guide 2016-2017



Solutions by:

Aspire Test Prep, LLC

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SYMBOLS USED

\Rightarrow which implies that

\therefore Therefore

\approx Approximately equal to

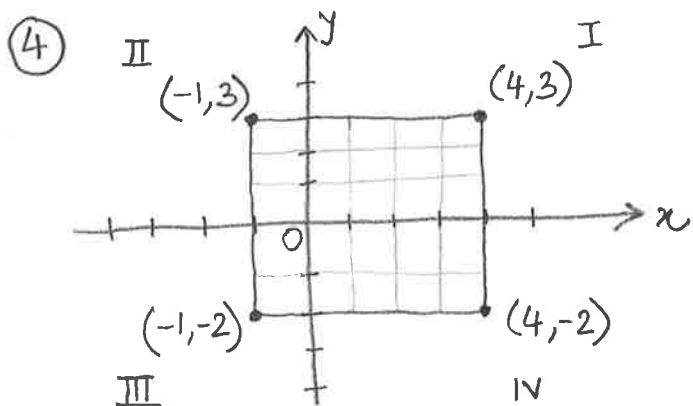
Δ Change in value, or delta, or difference in value

* SAE Shortest and Easiest solution for the given problem

① $a(4-a) - 5(a+7)$
 $= 4a - a^2 - 5a - 35 = -a^2 - a - 35 \Rightarrow$ C
SAE

② Given numbers : 0.2, 0.03 and $\frac{1}{4}$
 Recognize that to order these numbers from least to greatest,
 CONVERT ALL NUMBERS to DECIMALS.
 \Rightarrow the numbers are 0.20, 0.03 and 0.25
 \therefore Least to Greatest order is 0.03, 0.20, 0.25
 i.e. $0.03 < 0.2 < \frac{1}{4} \Rightarrow$ 9
SAE

③ Given $x^2 + 4 = 29$ Find $x^2 - 4$
 $\Rightarrow x^2 = 25$
 $\Rightarrow x^2 - 4 = 25 - 4 = 21 \Rightarrow$ C
SAE



Area in Quadrant III = $1 \times 2 = 2$
 Total Area of rectangle = $5 \times 5 = 25$
 $\therefore \% = \frac{2}{25} \times 100$
 $= 8$

COUNT THE NUMBER
 OF SQUARES USING THE GRID!

\Rightarrow F
SAE

- ⑤ Given in 1985 \rightarrow \$620
 1995 \rightarrow \$1000 \rangle \therefore In 10 years \rightarrow Increase of \$380
 \Rightarrow In 1 year \rightarrow Increase of \$38

Now 1985 \rightarrow 1991 represents 6 years

\therefore In 6 years \rightarrow Increase of \$38 \times 6 = \$228

$$\begin{aligned} \Rightarrow \text{Cost in 1991} &= \text{cost in 1985} + \text{Increase} \\ &= \$620 + \$228 \\ &= \$848 \Rightarrow \text{B} \end{aligned}$$

SAE

- ⑥ Given $\sqrt{x} \approx 9.2371$

$$\Rightarrow x \approx (9.2371)^2 \text{ which is greater than } 81 \Rightarrow \text{K}$$

SAE

- ⑦ Probability (that candy picked IS grape flavored)

$$= \frac{\text{Number of grape candy}}{\text{Total number of candy}} = \frac{2}{10} = \frac{1}{5} = P(\text{grape})$$

\therefore Probability (that candy picked IS NOT grape flavored)

$$= 1 - P(\text{grape}) = 1 - \frac{1}{5} = \frac{4}{5} \Rightarrow \text{E}$$

SAE

- ⑧ Given B as (-3, 4) and Midpoint of AB as (1, 2)

Say A is (x, y)

NOTE: IF YOU DRAW THE 2 POINTS IN THE GRAPH PROVIDED, ONLY OPTION (K) HAS A POSITIVE X-VALUE!

$$\text{Now Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = (1, 2)$$

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

$$\Rightarrow 2 = -3 + x$$

$$\Rightarrow \text{5} = x$$

$$\text{and } 2 = \frac{4 + y}{2}$$

$$\Rightarrow 4 = 4 + y$$

$$\Rightarrow \text{0} = y$$

Point A = (5, 0)

\Rightarrow K
SAE

⑨ Re-write the statement as an algebraic expression.

$$\text{Currently } 116 = 8 + 2(\text{customers one year ago})$$

$$\Rightarrow 116 = 8 + 2(x)$$

$$\Rightarrow 116 - 8 = 2x$$

$$\Rightarrow 2x = 108 \Rightarrow x = \frac{108}{2} = 54 \Rightarrow \boxed{\text{B}} \\ \boxed{\text{SAE}}$$

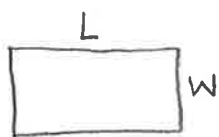
⑩ Given $\$2,200 = \$500 \text{ fee} + (\$ \text{ per foot} \times \text{fence length})$

$$\Rightarrow 2200 = 500 + x \times 200$$

$$\Rightarrow 1700 = 200x$$

$$\Rightarrow x = \frac{1700}{200} = \frac{17}{2} = 8.5 = \$8.50 \Rightarrow \boxed{\text{H}} \\ \boxed{\text{SAE}}$$

⑪ For the rectangular room:



$$\text{Area} = LW = 180 \text{ (given)} \quad \text{---(1)}$$

$$\text{Perimeter} = 2(L+W) = 54 \text{ (given)} \quad \text{---(2)}$$

$$\text{From Equation (2), } L+W = 27 \quad \text{---(3)}$$

Recognize that there is NO NEED to solve the two equations!

From the answer choices, find the two numbers that satisfy (1) & (3).

$$\Rightarrow L, W = 12, 15 \Rightarrow \boxed{\text{C}} \\ \boxed{\text{SAE}}$$

⑫ Given cost of candies = $\$4.25$

Amount paid = $\$10$

$$\therefore \text{Amount left} = \$10 - \$4.25$$

$$= \$5.75$$

$$= (5 \times 4) + 3 \text{ Quarters}$$

$$= 23 \text{ Quarters} \Rightarrow \boxed{\text{J}} \\ \boxed{\text{SAE}}$$

⑬ Average price per candy (in a box of 20)

$$= \frac{\text{Total price of box}}{\text{Number of candies in box}} = \frac{\$3.75}{20} = \$0.1875$$

= \$0.19 to the nearest cent

⇒ (B) SAE

⑭ Find the SLOPE for the linear relationship between c and n .

Using the first two data points:

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\$2.50 - \$1.50}{10 - 5} = \frac{1}{5} = \underline{0.2}$$

Recognize that out of the four answer choices, only choice F

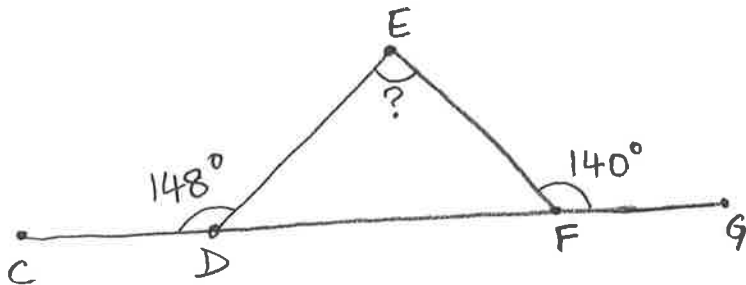
($C = \underline{0.2}n + 0.5$) has a slope of 0.2 ⇒ (F) SAE

⑮ Given $x^2 - 36x = 0$

$$\Rightarrow x(x - 36) = 0 \Rightarrow x = 0 \text{ or } x = 36$$

Since $x = 0$ is NOT in the answer choices, so $x = 36$ ⇒ (B) SAE

⑯ Given figure:



$$\angle EFD = 180^\circ - 140^\circ = 40^\circ$$

$$\angle CDE = \angle EFD + \angle DEF$$

since exterior angle is sum of the two interior angles

$$\Rightarrow 148^\circ = 40^\circ + \angle DEF$$

$$\Rightarrow 108^\circ = \angle DEF$$

(J) SAE