

3 ACT QUESTIONS — 3 minutes

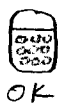
From "The Real ACT" 2ND Edition

⇒ "THE ONLY GUIDE WITH 3 "Real" ACT Tests"
"From the MAKERS OF THE ACT"

① KAYLA ran $1\frac{2}{5}$ miles on Monday and $2\frac{1}{3}$ miles on Tuesday. What was the total distance, in miles, Kayla ran during these 2 days?

② If $4x + 3 = 9x - 4$, then $x = ?$

③ The formula for the volume V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$
If the radius of a spherical rubber ball is $1\frac{1}{4}$ inches, what is the volume to the nearest cubic inch?



$$\textcircled{1} \quad 1\frac{2}{5} \text{ mi.} + 2\frac{1}{3} \text{ mi} \Rightarrow \frac{2}{5} + \frac{1}{3}$$

$$\frac{6}{15} + \frac{5}{15} = \frac{11}{15}$$

$$\therefore \boxed{3\frac{11}{15} \text{ mi.}}$$

$$\textcircled{2} \quad \cancel{4x} + 3 = 9x - 4$$

$$\cancel{74x} + 4 \quad -4x \quad + 4$$

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

$$\therefore \boxed{x = \frac{7}{5}}$$

$$\textcircled{3} \quad V = \frac{4}{3} \pi r^3 \quad r = 1\frac{1}{4} = \frac{5}{4} \text{ in}$$

$$V = \frac{4}{3} (3.14) \left(\frac{5}{4}\right)^3$$

$$V = \frac{\cancel{4}}{3} (3.14) \left(\frac{125}{\cancel{64}_{16}}\right) = \frac{(3.14)(125)}{48}$$

$$\hat{=} 8.18 \hat{=} \boxed{8 \text{ in}^3}$$

A little review:

"like" terms $\Rightarrow$ 1. same variable
2. variables have same exponent

"COMBINE" LIKE TERMS $\Rightarrow +$ or $-$

Ex) $\underline{2x} + \underline{3y} \quad \text{(-Z)} \quad \boxed{+4} + \underline{5xy} + \underline{3x} - \underline{2xy} + 4x^2$

$$\begin{array}{ccccccc} 5x & + & 3y & - & Z & + & 4 & + & 3xy & + & 4x^2 \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \text{degree 1} & & \text{degree 1} & & \text{degree 0} & & & & \text{degree 2} & & \text{degree 2} \end{array}$$

The degree of a single term is the sum
(monomial)
of the exponents of all its variables

$$4x^2 + 3xy + 5x + 3y - Z + 4$$

Sign Rules: $+, -$ SSA, KSS "same sign add, keep same sign"

Ex) $2 + 6 = 8$

$-2 - 6 = -8$

DSD, BOW "different signs take their difference, biggest one wins"

Ex) $-2 + 6 = 4$

$2 - 6 = -4$

SPECIAL "taking away a $-$ is a $+$ "

Ex) $-2 - (-6) = -2 + 6 = 4$

$\cdot, \div$ SPDN "same signs $+$, diff. signs $-$ "

Ex) $-2(-2) = 4$

$-2(2) = -4$

$\frac{-2}{-2} = 1$

F.R.

$+, -$ CD

$\cdot, \div$ FEM

$\cdot, \div$ FEM

If you end up with the solution
to an equation like: $-x = 3$

"Change All signs" by
imagining you multiply (or divide)
both sides by -1 } $-1 \cdot -x = 3 \cdot -1$
"SPDN"
GRE $x = -3$

↑
WANT x NOT $-x$
"by itself"

• or $\div$ both sides by -1 "changes all signs"

Same way you move $-$ from bottom
of fraction to top

$$\frac{x}{-5} = \frac{x}{-5} \cdot \frac{-1}{-1} = \frac{-x}{5}$$

Never leave $-$ in bottom,
take advantage of "SPDN"
to move $-$ to top
"change all signs" in top & bottom

Practice: sign and fraction rules.