

Power Up: Math ACT Prep, Week 9

Story Problems and Formulas



Bell Ringer

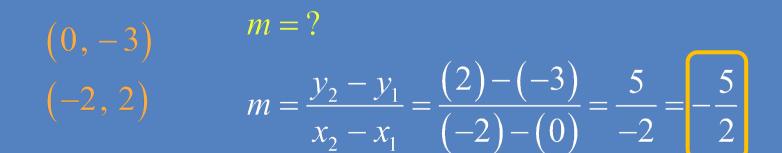
In the standard (x, y) coordinate plane, a line intersects the *y*-axis at (0, -3) and contains the point (-2, 2). What is the slope of the line?

(A)
$$-\frac{5}{2}$$
 (C) $-\frac{2}{5}$ (E) 2
(B) $-\frac{1}{2}$ (D) $\frac{4}{3}$





Bell Ringer (Solution) In the standard (x, y) coordinate plane, a line intersects the y-axis at (0, -3) and contains the point (-2, 2). What is the slope of the line?







Recall: Steps to Solving Story Problems

- 1) Draw a Quick Sketch?
- 2) Label the Known.
- 3) Label the Unknown.
- 4) Write an Equation.

What might be helpful for writing equations?



Essential Question

How can I increase my ACT score?



Learning Objectives

- Identify and algebraically represent critical information from a story problem.
- Apply formulas and problem-solving skills to story problems.



Formulas



- There are a lot of formulas that you need to know for the ACT.
- There are a lot of formulas that you already know!
- How do you know which one to use?



Formulas: Check Your Work



- Use your handout to check your work.
- On your handout, highlight the part of the story problem that prompted you to use a specific formula.
 O Did you already know that formula?



Forgot a Formula?



Since the ACT is a timed exam, if you do not remember a formula: Guess and select an answer choice. Mark (bookmark) the question to return to 2) later; maybe a later question will remind you of the needed formula. 3) Move on to the next question.



Exit Ticket

Leave your paper face down until the timer starts.







Exit Ticket (Answers)

1) B

2) G

3) B

4) J

5) D

How well did you do?

Remember, it is 100% okay to not get 100% of the questions right on the ACT.



Forgot a Formula?

 Use the empty space at the bottom of your handout to write any formulas or math facts that you struggle to remember.

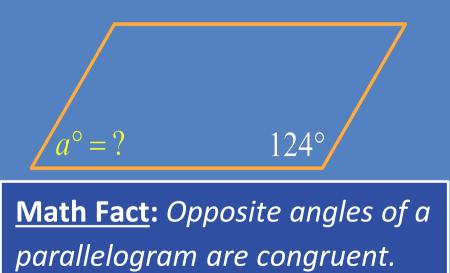
Other Formulas:

The sum of the interior angles of a quadrilateral is 360°.



Exit Ticket (Solution 1)

• The parallelogram below has consecutive angles with measures *a*^o and 124^o. What is the value of *a*?



 $360^{\circ} - 2(124^{\circ}) = 2a^{\circ}$ $112^{\circ} = 2a^{\circ}$ $56^{\circ} = a^{\circ}$

Or $180^{\circ} - 124^{\circ} = a^{\circ}$



Exit Ticket (Solution 2)

... her car's odometer read 30 miles. After Karla drove
 4 hours, the odometer read 210 miles. ... average driving speed, in miles per hour, during those 4 hours?

Math Facts:

Average speed = rate rate of change = slope $t_{1} = 0 \qquad d_{1} = 30$ $d = ? \qquad t_{2} = 4 \qquad d_{2} = 210$ d = rt $r = \frac{d}{t} = \frac{210 - 30}{4 - 0} = 45mph$

Exit Ticket (Solution 3)

... only one parabola ... has *x*-intercepts of -2 and 6.
 Which of the following equations represents the axis of symmetry ...?

Math Facts & Formulas: The axis of symmetry is in the middle (midpoint or average) of the two x-intercepts of a parabola.

$$x = ? x_1 = -2 x_1 = -2 x_2 = 6 x_2 = 2 x_2 x_2 = 2 x_2 x_2 = 2 x_2 x_2 x_2 = 2 x_2 x_2$$

Exit Ticket (Solution 3)

... only one parabola ... has *x*-intercepts of -2 and 6.
 Which of the following equations represents the axis of symmetry ...?

Math Facts & Formulas: The axis of symmetry is in the middle (midpoint or average) of the two x-intercepts of a parabola.

$$x = ? x_1 = -2 x_1 = -2 x_2 = 6 x_2 = 2 x_2 x_2 = 2 x_2 x_2 = 2 x_2 x_2 x_2 = 2 x_2 x_2$$

Exit Ticket (Solution 4)

... there are 3 mannequins for 1 costume each. ... Lan has
 8 costumes to select from, ... how many possible display
 arrangements ...? (Note: The positions of the <u>unselected</u> costumes do not matter.)

Formulas: The order of the <u>chosen</u> costumes matters, so this is a permutation.

$$n = 8$$
 ${}_{8}P_{3} = ?$
 $r = 3$ ${}_{8}P_{3} = 336$



Exit Ticket (Solution 5)

The list of numbers 11, A, B, 22, 31, and 33 has a median of 20. The mode of the list of numbers is 11. To the nearest whole number, what is the mean of the list?

median = 20mode = 11

mean = ?

Formulas:

- The *median* is the value in the middle; when there are an even number of values, find the average of the middle two values.
- The **mode** is the most common value.
- The **mean** is the average.



Exit Ticket (Solution 5...continued)

- Since the mode is 11, 11 must be listed more than once.
 A or B could be 11; it does not matter which.
- Since the median is 20, then 22, 31, and 33 are in the second-half of the list.





You Powered Up!

Achievement Unlocked: Ready for the Real Test



