Name:

5-a-day ACT prep #13

Solve each problem, show your work, and then choose the correct answer.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

1. Which of the following expressions is equivalent to $\frac{(2x^3z^2)^3}{x^3y^4z^2 \cdot x^{-4}z^3}$?

$\frac{8x^9z^6}{x^{-1}y^4z^5}$

$\frac{8x^{10}z}{y^4}$

A. $\frac{2x^7}{y^4}$
B. $\frac{6x^{10}z}{y^4}$
C. $\frac{6x^7}{y^4}$
D. $\frac{8x^{10}z}{y^4}$
E. None of these

2. The lines represented by the equations $-2x + 3y = 8$ *and* $x - 5y = -4$ intersect at the point M. What is the sum of the x and y coordinate of point M?

$-2x+3y=8$
$2(x-5y=-4)$
$-2x+3y=8$
$+\ 2x-10y=-8$
$0x-7y=0$
$y=0$
$-2x+3(0)=8$
$x=-4$

A. -4
B. -2
C. 0
D. 2
E. None of these

3. What is the sum of the solutions to the equation $x^2 = -5x$?

$x^2+5x=0$
$x=\frac{-5\pm\sqrt{(5)^2-2(1)(0)}}{2(1)}$
$x=\frac{-5\pm\sqrt{25}}{2}$
$x=\frac{-5\pm5}{2}$
$\frac{-5+5}{2}=0$
$\frac{-5-5}{2}=\frac{-10}{2}=-5$

A. $-5i$
B. -5
C. 0
D. $5i$
E. None of these

4. If $(x + a)$ *and* $(x + b)$ are factors of $x^2 + kx + m$, and $a, b, k,$ *and* m are integers such that $a < 0, b < 0,$ *and* $m > 0$, what must be true about k.

$(x-a)(x-b)$

A. $k < 0$
B. $k = 0$
C. $k > 0$
D. $k > m$
E. None of these

5. Which of the following expressions is equivalent to $\frac{y-5}{y^3} \div \frac{1}{y^2}$?

$\frac{y-5}{y^3} \cdot \frac{y^2}{1}$
$\frac{y-5}{y}$

A. $\frac{y-5}{y}$
B. $\frac{y-5}{y^5}$
C. $\frac{y^3-5y^2}{y^5}$
D. -5
E. None of these