Bellwork   Hon Alg 2   Wednesday, March 29, 2017

1. You are going away for a weekend to the cottage. You packed 3 pairs of shorts, 5 shirts, and 2 hats. How many different outfits can you make if an outfit consists of a pair of shorts, a shirt, and a hat?

2. You have four pieces of fruit to blend into a smoothie. But the blender can only hold three of the pieces of fruit. How many different smoothies can you make using three of the four pieces of fruit?

3. You have four framed pictures you would like to hang up in your house. One of your walls can hold only three pictures. How many ways can you arrange three of the four pictures on that wall?
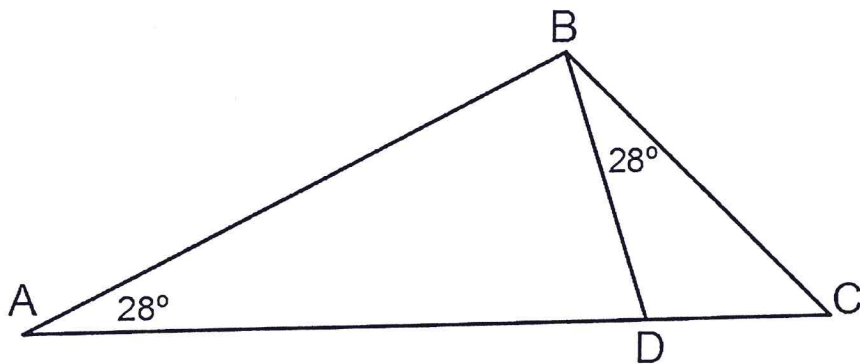
4. $(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{2}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$

If the equation above, where a is a constant, is true for all positive values of x and y, what is the value of a ?

A. 2
B. 3
C. 5
D. 6

5. If the equation $y = (x - 6)(x + 12)$ is graphed in the x-y plane, what is the x-coordinate of the parabola's vertex?

A. –6
B. –3
C. 3
D. 6

6. In the figure above, which of the following ratios has the same value as $\dfrac{AB}{BC}$?

A. $\dfrac{BD}{DC}$ B. $\dfrac{BC}{AC}$ C. $\dfrac{AD}{BD}$ D. $\dfrac{DC}{BC}$

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1. You are going away for a weekend to the cottage. You packed 3 pairs of shorts, 5 shirts, and 2 hats. How many different outfits can you make if an outfit consists of a pair of shorts, a shirt, and a hat?

30 outfits

$$\underset{\underset{\text{shirts}}{\#}}{5} \cdot \underset{\underset{\text{shorts}}{\#}}{3} \cdot \underset{\underset{\text{hats}}{\#}}{2} = 3$$

2. You have four pieces of fruit to blend into a smoothie. But the blender can only hold three of the pieces of fruit. How many different smoothies can you make using three of the four pieces of fruit?

Combination $_4C_3 \longrightarrow$ **4 smoothies**

3. You have four framed pictures you would like to hang up in your house. One of your walls can hold only three pictures. How many ways can you arrange three of the four pictures on that wall?

permutation $_4P_3 \rightarrow$ **24 arrangements**

4. $\overbrace{x^2y^3}$

$(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{2}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$

If the equation above, where a is a constant, is true for all positive values of x and y, what is the value of a?

A. 2
B. 3
C. 5
D. 6

use power to a power rule
$\left\{ (x^2y^3)^{\frac{1}{2}} = xy^{\frac{3}{2}} \right.$
$\left((x^2y^3)^{\frac{1}{2}} = xy^{\frac{3}{2}} \right.$

$xy^{\frac{3}{2}} \cdot xy^{\frac{3}{2}} \leftarrow$ use power of a product rule
$= x^2y^3$

$x^2y^3 = x^{\frac{a}{3}}y^{\frac{a}{2}} \leftarrow$ exponents must be =

$2 = \frac{a}{3}$ or $\frac{a}{2} = 3$
$a = 6$ $a = 6$

5. If the equation $y = (x-6)(x+12)$ is graphed in the x-y plane, what is the x-coordinate of the parabola's vertex?
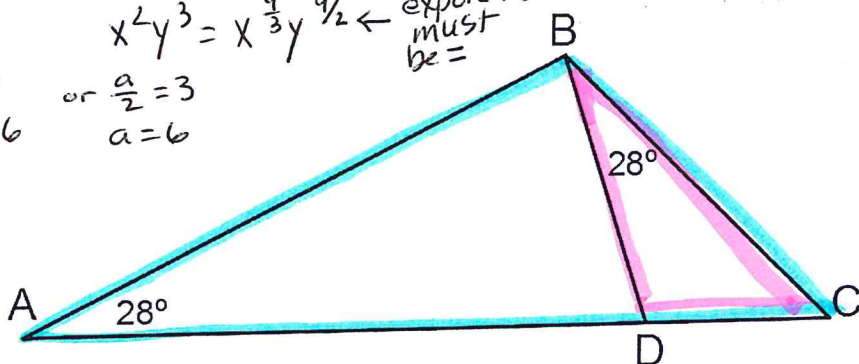
A. −6
B. −3
C. 3
D. 6

x-intercepts = 6, −12

LOS $x = \dfrac{6 + -12}{2}$

$= \dfrac{-6}{2}$

$x = -3$

this is also x-coord of the vertex

6. In the figure above, which of the following ratios has the same value as $\dfrac{AB}{BC}$?

A. $\dfrac{BD}{DC}$ B. $\dfrac{BC}{AC}$ C. $\dfrac{AD}{BD}$ D. $\dfrac{DC}{BC}$

$\triangle ABC \sim \triangle BDC$