Topic: Transitive property

Question: Use transitive property to solve for the variable.

Find z if

$$x = 2z + 1$$

$$x = y$$

$$y = 4z + 2$$

Answer choices:

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

B $z = \frac{1}{2}$

C $z = -\frac{3}{2}$

D $z = \frac{3}{2}$

Solution: A

Since we've been told that $x = 2z + 1$, and that $x = y$, transitive property tells us that we can also say

$$y = 2z + 1$$

We've also been told that $y = 4z + 2$, so we can say

$$4z + 2 = 2z + 1$$

$$4z - 2z + 2 = 2z - 2z + 1$$

$$2z + 2 = 1$$

$$2z + 2 - 2 = 1 - 2$$

$$2z = -1$$

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

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

Topic: Transitive property

Question: Solve for the variable.

Find z if

$$x = 6 - 4z$$

$$x = y$$

$$y = z + 3$$

Answer choices:

A $z = \frac{2}{3}$

B $z = \frac{3}{2}$

C $z = \frac{3}{5}$

D $z = \frac{5}{3}$

Solution: C

Since we've been told that $x = 6 - 4z$, and that $x = y$, transitive property tells us that we can also say

$$y = 6 - 4z$$

We've also been told that $y = z + 3$, so we can say

$$6 - 4z = z + 3$$

$$6 - 4z + 4z = z + 4z + 3$$

$$6 = z + 4z + 3$$

$$6 - 3 = z + 4z$$

$$3 = 5z$$

$$\frac{3}{5} = \frac{5z}{5}$$

$$z = \frac{3}{5}$$

Topic: Transitive property

Question: Using the transitive property, choose the equation that would be the correct conclusion for the pair of equations.

$$w = r$$

$$r = b$$

Answer choices:

A $b = r$

B $b = b$

C $w = b$

D $r = w$

Solution: C

The pattern for the transitive property of equality is

If $a = b$ and $b = c$,

then $a = c$

Applying that to the given pair of equations gives:

If $w = r$ and $r = b$,

then $w = b$

which is answer choice C.