

GQ: How do we apply algebra to equations with literals?

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 23 April

Simplify each expression by “collecting like terms”

$$\begin{aligned}
 &1. \quad 3x + 2x \\
 &= 5x \\
 &= x + x + x + x + x \\
 &= 5x \\
 &= (3 + 2)x \\
 &= 5x
 \end{aligned}$$

$$\begin{aligned}
 &2. \quad 5\pi - 2\pi + 4\pi \\
 &= (5 - 2 + 4)\pi \\
 &= 7\pi
 \end{aligned}$$

Factoring
Distributive property

Simplify each expression by “collecting like terms”

$$1. \ 3\underline{x} - 2\underline{x} + 7\underline{y}$$

$$= x + 7y$$

$$3. \ -\underline{k} + 7\underline{\sqrt{2}} + 2\underline{k} + 3\underline{\sqrt{2}}$$

$$= k + 10\sqrt{2}$$

$$2. \ 5\underline{z} + 5\underline{\pi} - \underline{2\pi} + \underline{z}$$

$$= 6z + 3\pi$$

$$= 6z + 3\pi$$

Handwritten notes above problem 2: $z+z+z+z+z$ and $+\pi+\pi+\pi+\pi+\pi$ with a red box around $+\pi+\pi-\pi-\pi$ and a red arrow pointing to the final result.

$$4. \ 5\pi\underline{x} - 2\pi\underline{x} + 9\underline{y}$$

$$= (5\pi - 2\pi)x + 9y$$

$$= 3\pi x + 9y$$

Handwritten notes above problem 4: A red arrow points from the x terms to the parentheses, and a red y is written next to the final result.

GQ: How do we apply algebra to equations with literals

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest 11.1 Wed. 22

Solve each equation for the unknown

$$1. \frac{k}{\sqrt{3}} = 11$$

$$\sqrt{3} \cdot \frac{k}{\sqrt{3}} = \sqrt{3} \times 11$$

$$\frac{\sqrt{3}}{\sqrt{3}}$$

$$k = \frac{11\sqrt{3}}{\sqrt{3}}$$

$$k = 11\sqrt{3}$$

$$2. 5z - 2\pi = 4\pi + z$$

$-z \quad +2\pi \quad +2\pi \quad -z$

$$4z = 6\pi \quad \div 4$$

$$z = \frac{6}{4}\pi$$

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

$$\frac{\sqrt{3}}{\sqrt{3}} \cdot 11$$

Solve each equation for the unknown

$$1. \quad 4\underline{x} - \underline{x}\sqrt{3} = 11$$

$$(4 - \sqrt{3})\underline{x} = 11$$

$$(4 - \sqrt{3})$$

$$(4 - \sqrt{3}) \div (4 - \sqrt{3})$$

$$1 \underline{x} = \frac{11}{4 - \sqrt{3}}$$

$$2. \quad 5\pi\underline{x} - 2\pi\underline{x} = \pi\underline{x} + 14$$

$$5\pi\underline{x} - 2\pi\underline{x} - \pi\underline{x} = 14$$

$$(5\pi - 2\pi - \pi)\underline{x} = 14$$

$$2\pi\underline{x} = 14 \quad \div 2\pi$$

$$\underline{x} = \frac{14}{2\pi} = \frac{7}{\pi}$$