One-Step Equations

7a. Graham is solving the equation $d^2 = 1$.

Graham says,



$d = 0.5$ because $0.5 + 0.5 = 1$.

Is he correct? Explain your answer.

GD

R

7b. Nell is solving the equation $b - 7 = -4$.

Nell says,



$b = 11$ because $11 - 7 = 4$.

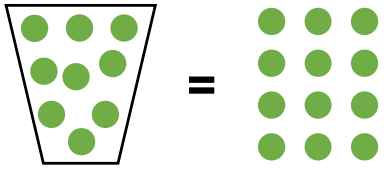
Is she correct? Explain your answer.

GD

R

8a. Amina has created a representation to help her solve the following equation:

$b + 3 = 12$



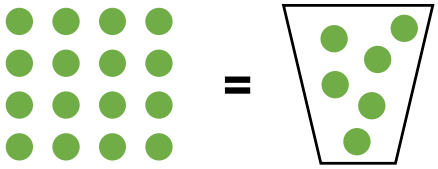
Is Amina correct? Convince me.

GD

R

8b. Brynn has created a representation to help him solve the following equation:

$16 = x + 10$



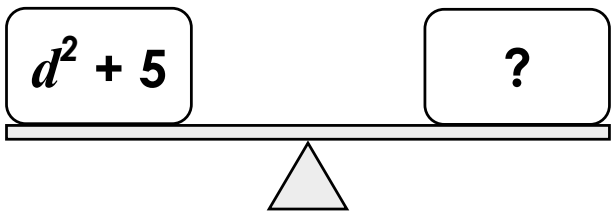
Is Brynn correct? Convince me.

GD

R

9a. Create three different equations that will balance the scale when $d = 7$.

Each equation must include a decimal number or fraction.

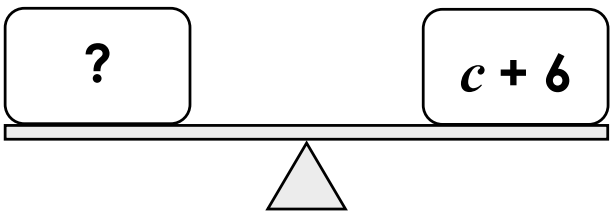


GD

PS

9b. Create three different equations that will balance the scale when $c = -5$.

Each equation must include a decimal number or fraction.



GD

PS

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Reasoning and Problem Solving One-Step Equations

Developing

1a. Jonah is incorrect because $2n$ means $2 \times n = 20$, so $n = 10$.

2a. Yes; $n = 5$ so both cups should contain 5 counters.

3a. Various answers, for example:
$3v = 3 \times 6$; $9 + 9 = 3v$; $3v = 19 - 1$

Expected

4a. Euan is incorrect because $c = 27$, not 45; he needs to subtract 9 from 36 to balance the equation, not add it.

5a. No; $b = 5$, so each of the three cups should contain 5 counters each.

6a. Various answers, for example:
$60 + 4 = r^2$; $r^2 = 70.5 - 6.5$; $16 \times 4 = r^2$

Greater Depth

7a. Graham is incorrect because d^2 means $d \times d = 1$, so $d = 1$; he needs to multiply d, not add it.

8a. No; although Amina has correctly shown that $b = 9$, she has forgotten to add 3 counters to it (as shown in the equation) to create a total of 12.

9a. Various answers, for example:
$27.5 \times 2 - 1 = d^2 + 5$; $d^2 + 5 = 50.5 + 3.5$; $60 \frac{1}{2} - 6 \frac{1}{2} = d^2 + 5$

Reasoning and Problem Solving One-Step Equations

Developing

1b. Amy-Jo is incorrect because $2c$ means $2 \times c = 6$, so $c = 3$.

2b. No; $n = 6$ so both cups should contain 6 counters.

3b. Various answers, for example:
$n = 1 \times 1$; $2 - 1 = n$; $n = 0 + 1$

Expected

4b. Maisy is incorrect because $f = 10$, not 90; this is because $30 \div 3 = 10$, which would balance the equation.

5b. No; Jack has shown 4×4, which would total 16. He needs to show three cups which contain 4 counters each, which would show 3×4.

6b. Various answers, for example:
$4n = 1 \times 2$; $0.75 + 1.25 = 4n$; $4n = 4 \frac{1}{2} - 2 \frac{1}{2}$

Greater Depth

7b. Nell is incorrect because $b = 3$, not 11; this is because she needs to add 7 to -4 to balance the equation, not subtract 7 from 11.

8b. No; although Brynn has correctly identified that $x = 6$, he has forgotten to add 10 counters to it (as shown in the equation) to create a total of 16.

9b. Various answers, for example:
$1 = 9.5 - 8.5$; $-1.5 + 2.5 = 1$; $\frac{1}{2} \times 2 = 1$

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