5.3 Equations with Grouping

PRACTICE

Directions: Brust solved the following equations. He DEFINITELY made some mistakes! Using complete sentences explain his mistake and then find the correct solution.

1)

$$\frac{2}{3}(g+8)=6$$
$$\frac{2}{3}\left(\frac{2}{3}(g+8)\right)=6(2)$$
$$\frac{3(g+8)}{3}=\frac{12}{3}$$
$$g+8=4$$
$$-8=-8$$
$$g=-4$$

He should have multiplied by 3 and not 2.2

$3\left(\frac{2}{3}(g+8)\right)=6(3)$

$\frac{2(g+8)}{2}=\frac{18}{2}$

$g+8=9$

$-8\quad -8$

$g=1$

2)

$$\frac{f-7}{3}=-5$$
$$3\left(\frac{f-7}{3}\right)=3(-5)$$
$$f+7=-15$$
$$-7=-7$$
$$f=-22$$

Changed the subtract 7 to adding 7.

$f-7=-15$

$+7\quad +7$

$f=-8$

Directions: Solve and check.

3) $10=\frac{5}{3}x$

$\frac{30}{5}=\frac{5x}{5}$

$6=x$

$10=\frac{5}{3}(6)$

$10=10$ ✓

4) $\frac{1}{4}x-10=-7$

$+10\quad +10$

$(\frac{1}{4}x)4=3(4)$

$x=12$

$\frac{1}{4}(12)-10=-7$

$3-10=-7$

$-7=-7$ ✓

5) $\frac{k-4}{2}=-7$

(2)

$k-4=-14$

$+4\quad +4$

$k=-10$

$\frac{-10-4}{2}=-7$

$\frac{-14}{2}=-7$

$-7=-7$ ✓

6) $-3(n+10)=-9$

$\frac{-3}{}\quad\frac{}{-3}$

$n+10=3$

$-10\quad -10$

$n=-7$

$-3(-7+10)=-9$

$-3(3)=-9$

$-9=-9$ ✓

7) $\frac{3}{4}x-20=-11$

$+20\quad +20$

$4(\frac{3}{4}x)=9(4)$

$\frac{3x}{3}=\frac{36}{3}$

$x=12$

$\frac{3}{4}(12)-20=-11$

$9-10=-11$

$-11=-11$ ✓

8) $-16=4(p-2)$

$\frac{-16}{4}=\frac{4(p-2)}{4}$

$-4=p-2$

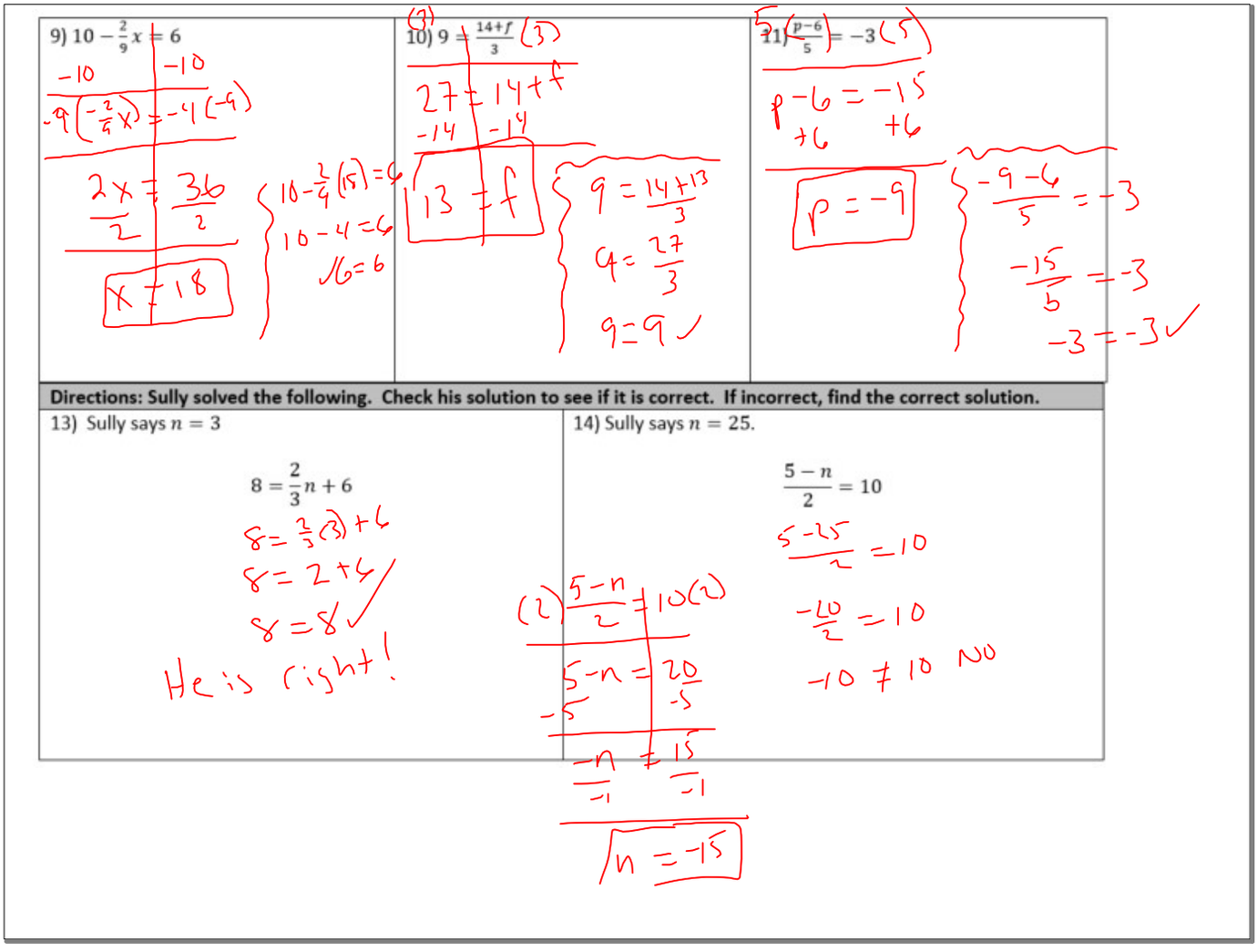
$+2\quad +2$

$-2=p$

$-16=4(-2-2)$

$-16=4(-4)$

$-16=-16$ ✓


9) $10-\frac{2}{9}x=6$
-10 -10
$-9\left(-\frac{2}{9}x\right)=-4(-9)$
$\frac{2x}{2}=\frac{36}{2}$
$x=18$
$10-\frac{2}{9}(18)=6$
$10-4=6$
$6=6$
10) $9=\frac{14+f}{3}$ (3)
$27=14+f$
-14 -14
$13=f$
$9=\frac{14+13}{3}$
$9=\frac{27}{3}$
$9=9$ ✓
11) $\frac{p-6}{5}=-3$ (5)
$p-6=-15$
+6 +6
$p=-9$
$\frac{-9-6}{5}=-3$
$\frac{-15}{5}=-3$
$-3=-3$ ✓
Directions: Sully solved the following. Check his solution to see if it is correct. If incorrect, find the correct solution.
13) Sully says $n=3$
$8=\frac{2}{3}n+6$
$8=\frac{2}{3}(3)+6$
$8=2+6$
$8=8$ ✓
He is right!
14) Sully says $n=25$.
$\frac{5-n}{2}=10$
$\frac{5-25}{2}=10$
$\frac{-20}{2}=10$
$-10\neq 10$ NO
(2) $\frac{5-n}{2}=10(2)$
$5-n=20$
-5 -5
$-n=15$
$\frac{-n}{-1}=\frac{15}{-1}$
$n=-15$