

## Equivalent Expressions Worksheets

For Problems 1–9, write equivalent expressions by combining like terms. Verify the equivalence of your expression and the given expression by evaluating each for the given values:  $a = 2$ ,  $b = 5$ , and  $c = -3$ .

1.  $3a + 5a$

2.  $8b - 4b$

3.  $5c + 4c + c$

4.  $3a + 6 + 5a$

5.  $8b + 8 - 4b$

6.  $5c - 4c + c$

7.  $3a + 6 + 5a - 2$

8.  $8b + 8 - 4b - 3$

9.  $5c - 4c + c - 3c$

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1.  $3a + 5a$

$$\begin{aligned} &8a \\ &8(2) \\ &16 \end{aligned}$$

$$\begin{aligned} &3(2) + 5(2) \\ &6 + 10 \\ &16 \end{aligned}$$

2.  $8b - 4b$

$$\begin{aligned} &4b \\ &4(5) \\ &20 \end{aligned}$$

$$\begin{aligned} &8(5) - 4(5) \\ &40 - 20 \\ &20 \end{aligned}$$

3.  $5c + 4c + c$

$$\begin{aligned} &10c \\ &10(-3) \\ &-30 \end{aligned}$$

$$\begin{aligned} &5(-3) + 4(-3) + (-3) \\ &-15 + (-12) + (-3) \\ &-27 + (-3) \\ &-30 \end{aligned}$$

4.  $3a + 6 + 5a$

$$\begin{aligned} &8a + 6 \\ &8(2) + 6 \\ &16 + 6 \\ &22 \end{aligned}$$

$$\begin{aligned} &3(2) + 6 + 5(2) \\ &6 + 6 + 10 \\ &12 + 10 \\ &22 \end{aligned}$$

5.  $8b + 8 - 4b$

$$\begin{aligned} &4b + 8 \\ &4(5) + 8 \\ &20 + 8 \\ &28 \end{aligned}$$

$$\begin{aligned} &8(5) + 8 - 4(5) \\ &40 + 8 - 20 \\ &48 - 20 \\ &28 \end{aligned}$$

6.  $5c - 4c + c$

$$\begin{aligned} &2c \\ &2(-3) \\ &-6 \end{aligned}$$

$$\begin{aligned} &5(-3) - 4(-3) + (-3) \\ &-15 + (-4(-3)) + (-3) \\ &-15 + (12) + (-3) \\ &-3 + (-3) \\ &-6 \end{aligned}$$

7.  $3a + 6 + 5a - 2$

$$\begin{aligned} &8a + 4 \\ &8(2) + 4 \\ &16 + 4 \\ &20 \end{aligned}$$

$$\begin{aligned} &3(2) + 6 + 5(2) - 2 \\ &6 + 6 + 10 + (-2) \\ &12 + 10 + (-2) \\ &22 + (-2) \\ &20 \end{aligned}$$

8.  $8b + 8 - 4b - 3$

$$\begin{aligned} &4b + 5 \\ &4(5) + 5 \\ &20 + 5 \\ &25 \end{aligned}$$

$$\begin{aligned} &8(5) + 8 - 4(5) - 3 \\ &40 + 8 + (-4(5)) + (-3) \\ &40 + 8 + (-20) + (-3) \\ &48 + (-20) + (-3) \\ &28 + (-3) \\ &25 \end{aligned}$$

9.  $5c - 4c + c - 3c$

$$\begin{aligned} &-1c \\ &-1(-3) \\ &3 \end{aligned}$$

$$\begin{aligned} &5(-3) - 4(-3) + (-3) - 3(-3) \\ &-15 + (-4(-3)) + (-3) + (-3(-3)) \\ &-15 + (12) + (-3) + (9) \\ &-3 + (-3) + 9 \\ &-6 + 9 \\ &3 \end{aligned}$$