



Expressions & Equations 7.EE.A.1-2

Use properties of operations to generate equivalent expressions.

1. Which expressions are equivalent to

$$3\frac{1}{4} - \left(-\frac{5}{8}\right)?$$

- A. $3\frac{1}{4} - \left(\frac{5}{8}\right)$
- ☒ B. $3\frac{1}{4} + \left(\frac{5}{8}\right)$
- C. $3\frac{1}{4} + \left(-\frac{5}{8}\right)$
- ☒ D. $3\frac{1}{4} + \left(+\frac{5}{8}\right)$
- E. $-3\frac{1}{4} + \left(-\frac{5}{8}\right)$
- F. $-3\frac{1}{4} + \left(+\frac{5}{8}\right)$

2. Which expressions are a factor of
 $-48xyz - 24xy + 40xyz$?

Select **all** that apply.

- ☒ A. 4
- B. 24
- C. $3x$
- ☒ D. $8y$
- ☒ E. $2xy$
- F. $6xy$
- G. xyz

3. A garden is 15 feet long by 5 feet wide. The length and width of the garden will each be increased by the same number of feet. This expression represents the perimeter of the larger garden:

$$(x + 15) + (x + 5) + (x + 15) + (x + 5)$$

Which expression is equivalent to the expression for the perimeter of the larger garden?

Select **all** that apply.

- ☒ A. $4x + 40$
- ☒ B. $2(2x + 20)$
- C. $2(x + 15)(x + 5)$
- D. $4(x + 15)(x + 5)$
- ☒ E. $2(x + 15) + 2(x + 5)$

4. Indicate whether each expression is equivalent to $\frac{1}{2}x-1$, equivalent to $x-\frac{1}{2}$, or not equivalent to $\frac{1}{2}x-1$ or $x-\frac{1}{2}$.

Expression	Equivalent to $\frac{1}{2}x-1$	Equivalent to $x-\frac{1}{2}$	Not Equivalent to $\frac{1}{2}x-1$ or $x-\frac{1}{2}$
$\frac{2}{3}\left(\frac{3}{4}x-\frac{3}{2}\right)$	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
$(2x+1)-\left(x+\frac{3}{2}\right)$	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5. Sharon's dog weighs p pounds. Jen's dog weighs 20% more than Sharon's dog. Which expressions represent the weight, in pounds, of Jen's dog? Select each correct answer.

- A. ☐ $0.25p$
- B. ☒ $1.2p$
- C. ☐ $p + 0.2$
- D. ☐ $p + 1.2$
- E. ☒ $p + 0.2p$

6. Determine which expression is equivalent to $\frac{3}{4}-x\left(\frac{1}{2}-\frac{5}{8}\right)+\left(-\frac{3}{8}x\right)$

- A. $-\frac{3}{4}x$
- B. $\frac{1}{2}x$
- C. $\frac{1}{8}-\frac{7}{8}x$
- D. $\frac{3}{4}-\frac{1}{4}x$

7. Rodney decides to pay a \$200 fee in 3 payments. The first payment is 10% of the original fee. The second payment is 25% of the original fee. Which expressions represent the amount of money for the third payment? Select all that apply.

☐ $200 - 0.25(200)$

☒ $200 - 0.35(200)$

☐ $200 - 0.65(200)$

☐ $200 - 0.75(200)$

☐ $0.25(200)$

☐ $0.35(200)$

☒ $0.65(200)$

☐ $0.75(200)$

8. Two students determined the value of this expression.

$$-2.5(1.4 + 3.1) + 6.9(-4.3)$$

These are the steps each student used:

Student P	Student Q
Step 1: $-3.5 + 7.75 + 6.9(-4.3)$	Step 1: $-3.5 - 7.75 + 6.9(-4.3)$
Step 2: $-3.5 + 7.75 - 29.67$	Step 2: $-3.5 - 7.75 - 29.67$
Step 3: $7.75 - 3.5 - 29.67$	Step 3: $-(3.5 - 7.75 - 29.67)$
Step 4: -25.42	Step 4: $-(-33.92)$
	Step 5: 33.92

- Describe any errors made by Student P.
- Describe any errors made by Student Q.
- Show a complete set of correct steps to determine the value of the expression.

Student P made a mistake in Step 1. When you multiply -2.5 by 3.1 , it equals -7.75 .

Student Q made a mistake in Step 3. If you factor out -1 , the numbers inside the parentheses would be positive.

Step 1: $-3.5 - 7.75 + 6.9(-4.3)$

Step 2: $-3.5 - 7.75 - 29.67$

Step 3: $-11.25 - 29.67$

Step 4: -40.92