

<p>1. Write as a mixed number</p> <p>(a) $\frac{20}{13} = 1\frac{7}{13}$</p> <p>Write as an improper fraction</p> <p>(b) $4\frac{3}{5} = \frac{23}{5}$</p>	<p>2. Multiply and simplify.</p> <p>(a) $\frac{5}{7} \cdot \frac{25^5}{26} = \frac{25}{26}$</p> <p>Divide and simplify</p> <p>(b) $\frac{6}{17} \div \frac{3}{7} = \frac{6}{17} \cdot \frac{7}{3} = \frac{14}{17}$</p>
<p>3. Add and simplify</p> <p>(a) $\frac{3}{12} + \frac{5}{12} + \frac{2}{12} = \frac{10^5}{12_6} = \frac{5}{6}$</p> <p>Subtract and simplify</p> <p>(b) $\frac{15}{28} - \frac{1}{28} = \frac{14^1}{28_2} = \frac{1}{2}$</p>	<p>4. Add and simplify</p> <p>(a) $\frac{5}{6} + \frac{3}{8} = \frac{5 \cdot 4}{6 \cdot 4} + \frac{3 \cdot 3}{8 \cdot 3} = \frac{20}{24} + \frac{9}{24} = \frac{29}{24}$</p> <p>Subtract and simplify</p> <p>(b) $\frac{18}{20} - \frac{3}{5} = \frac{18}{20} - \frac{3 \cdot 4}{5 \cdot 4} = \frac{18}{20} - \frac{12}{20} = \frac{6^3}{20_{10}} = \frac{3}{10}$</p>

<p>5. Evaluate</p> <p>(a) $(1.5)^2 = 2.25$</p> $\begin{array}{r} 1.5 \\ \underline{1.5} \\ 75 \\ \underline{15} \\ 2.25 \end{array}$ <p>(b) $\left(\frac{1}{12}\right)^2 = \frac{1}{12} \cdot \frac{1}{12} = \frac{1}{144}$</p>	<p>6. Evaluate</p> <p>(a) $\sqrt{\frac{4}{49}} = \sqrt{\frac{2^2}{7^2}} = \frac{2}{7}$</p> <p>(b) $3\sqrt{16} = 3 \cdot \sqrt{4^2} = 3 \cdot 4 = 12$</p>
<p>7. Evaluate</p> <p>(a) $50 \div 5 \times 2 = 10 \times 2 = 20$</p> <p>(b) $8^2 + 5(9 - 3) = 64 + 5(9 - 3)$ $= 64 + 5(6)$ $= 64 + 30$ $= 94$</p>	<p>8. Evaluate</p> <p>(a) $(7\sqrt{25} - 5 \cdot 6)^2 = (7 \cdot 5 - 5 \cdot 6)^2$ $= (35 - 30)^2 = 5^2 = 25$</p> <p>(b) $\frac{9^2 - 9 \cdot 5}{10 - 2 \cdot 3} = \frac{81 - 9 \cdot 5}{10 - 2 \cdot 3} = \frac{81 - 45}{10 - 6}$ $= \frac{36}{4} = 9$</p>

9. Evaluate each expression using $a = 4, b = 2$ and $c = 1$

(a) $b^2 + 4a - c = 2^2 + 4 \cdot 4 - 1$
 $= 4 + 4 \cdot 4 - 1$
 $= 4 + 16 - 1$
 $= 20 - 1$
 $= 19$

(b) $\frac{5c - a}{2b} = \frac{5 \cdot 1 - 4}{2 \cdot 2} = \frac{5 - 4}{4} = \frac{1}{4}$

10. Translate each to an algebraic expression

(a) two less than four times a number

$$4x - 2$$

(b) six times the sum of a number and three

$$6(x + 3)$$

11. Check mark each set to which these numbers belong:

Set	-8	$\frac{1}{5}$
N		
Whole Nos.		
Z	✓	
Q	✓	✓
Irrational Nos.		
R	✓	✓

12. Evaluate

(a) $-6 + -15 + 6 = -6 + 6 + -15$
 $= 0 + -15$
 $= -15$

(b) $-12 + (-0.45) = -12.45$

$$\begin{array}{r} -12.00 \\ \underline{-0.45} \\ -12.45 \end{array}$$

13. Evaluate

(a) $145.5 + (-152.6) = -7.1$

$$\begin{array}{r} -152.6 \\ \underline{145.5} \\ -7.1 \end{array}$$

(b)
$$-\frac{4}{7} + \left(-\frac{7}{10}\right) = -\frac{4 \cdot 10}{7 \cdot 10} + \left(-\frac{7 \cdot 7}{10 \cdot 7}\right)$$

$$= -\frac{40}{70} + -\frac{49}{70} = -\frac{89}{70}$$

14. Evaluate

(a) $-12 - 9 = -12 + -9 = -21$

(b)
$$\frac{1}{5} - \left(-\frac{1}{8}\right) = \frac{1 \cdot 8}{5 \cdot 8} + -\left(-\frac{1 \cdot 5}{8 \cdot 5}\right)$$

$$= \frac{8}{40} + \frac{5}{40} = \frac{13}{40}$$

15. Evaluate

(a) $(-2.3)(-3.1) = 7.13$

$$\begin{array}{r} -2.3 \\ \underline{-3.1} \\ 23 \\ \underline{69} \\ 7.13 \end{array}$$

(b)
$$-\frac{4}{6} \cdot \frac{30}{23} = -\frac{4}{\cancel{6}_1} \cdot \frac{30^5}{23} = -\frac{20}{23}$$

16. Evaluate

(a) $40 \div (-5) = -8$

(b)
$$-\frac{4}{5} \div \left(-\frac{10}{3}\right) = -\frac{4^2}{5} \cdot \left(-\frac{3}{10_5}\right) = \frac{6}{25}$$

<p>17. Evaluate</p> <p>(a) $-5^2 - 5^2 = -25 - 25$ $= -25 + -25$ $= -50$</p> <p>(b) $8 \cdot \left(-\frac{1}{12}\right) = \frac{8^2}{1} \cdot \left(-\frac{1}{\cancel{12}_3}\right) = -\frac{2}{3}$</p>	<p>18. Evaluate</p> <p>(a) $24 - 7(6 - 10) = 24 - 7(-4)$ $= 24 + -7(-4)$ $= 24 + 28$ $= 52$</p> <p>(b) $-1 + \frac{4}{5} = -\frac{1}{1} + \frac{4}{5} = -\frac{1 \cdot 5}{1 \cdot 5} + \frac{4}{5}$ $= -\frac{5}{5} + \frac{4}{5} = -\frac{1}{5}$</p>
<p>19. Let $a = -5$ and $b = -3$ and evaluate</p> <p>(a) $a + b = -5 + -3 = -8$</p> <p>(b) $2b + 5ab = 2 \cdot (-3) + 5(-5)(-3)$ $= -6 + -25(-3)$ $= -6 + 75$ $= 69$</p>	<p>20. Let $x = -4$ and $y = -3$ and evaluate</p> <p>(a) $x^2 - y^2 = (-4)^2 - (-3)^2$ $= 16 - 9$ $= 7$</p> <p>(b) $x^2 - 5y + xy = (-4)^2 - 5(-3) + (-4)(-3)$ $= 16 - 5(-3) + (-4)(-3)$ $= 16 + -5(-3) + (-4)(-3)$ $= 16 + 15 + 12$ $= 31 + 12$ $= 43$</p>

<p>21.</p> <p>(a) Use the commutative property of multiplication to rewrite</p> $x \cdot (-5)$ $-5x$ <p>(b) Use the associative property of multiplication to rewrite</p> $(-7a) b$ $-7(ab)$	<p>22. Simplify</p> <p>(a) $(-7 + x) + 14$</p> $= x + -7 + 14$ $= x + 7$ <p>(b) $10\left(\frac{3}{5}a\right) = \frac{\cancel{10}^2}{1} \cdot \frac{3}{\cancel{5}_1} a = \frac{6}{1} a = 6a$</p>
<p>23. Use the distributive property to rewrite and simplify</p> <p>(a) $6(x + 5) = 6x + 30$</p> <p>(b) $-12(3a - 4) = -12(3a + -4)$ $= -36a + 48$</p>	<p>24. What property is illustrated by each of the following?</p> <p>(a) $7 + (x + y) = (7 + x) + y$</p> <p style="text-align: center;">Associative Property of Addition</p> <p>(b) $7 + (x + y) = 7 + (y + x)$</p> <p style="text-align: center;">Commutative Property of Addition</p>

25. Find the additive inverse (opposite) and the multiplicative inverse (reciprocal) for each number

	Additive Inverse	Multiplicative Inverse
14	-14	$\frac{1}{14}$
$-\frac{2}{13}$	$\frac{2}{13}$	$-\frac{13}{2}$