

10-10-18

Aim: SWBAT multiply and divide fractions and mixed numbers including negatives.

HW: Packet Page 17

Quiz Tomorrow (add and subtract with signs)

Do Now: Quick Quiz

HOMEWORK

Find the answers using a scientific calculator. Write answers as an improper fraction AND as a mixed number where applicable.

- 1. $\frac{4}{5} + \left(-\frac{7}{5}\right) = a$ $-\frac{3}{5}$
- 2. $-\frac{5}{4} + \left(-\frac{7}{4}\right) = m$ -3
- 3. $-\frac{5}{8} + \frac{1}{6} = b$ $-\frac{11}{24}$
- 4. $y = -\frac{1}{2} + \left(-\frac{3}{4}\right)$ $-\frac{5}{4}$ OR $-1\frac{1}{4}$
- 5. $z = 4\frac{1}{2} + -3\frac{2}{3}$ $\frac{5}{6}$
- 6. $b = -5\frac{2}{3} + \left(-8\frac{1}{2}\right)$ $-\frac{85}{6}$ OR $-14\frac{1}{6}$
- 7. $-10 + 7\frac{1}{3} = y$ $-\frac{8}{3}$ OR $-2\frac{2}{3}$
- 8. $-1\frac{2}{7} + \left(-5\frac{3}{14}\right) = p$ $-\frac{13}{2}$ OR $-6\frac{1}{2}$
- 9. $9\frac{5}{6} + \left(-8\frac{3}{4}\right) = m$ $\frac{13}{12}$ OR $1\frac{1}{12}$
- 10. $x = -\frac{5}{8} + \frac{7}{24}$ $-\frac{1}{3}$
- 11. $-6\frac{1}{2} + \left(-4\frac{2}{3}\right) = h$ $-\frac{67}{6}$ OR $-11\frac{1}{6}$
- 12. $-1\frac{3}{11} + \left(-5\frac{4}{5}\right) = z$ $-\frac{389}{55}$ OR $-7\frac{4}{55}$
- 13. $-16\frac{3}{4} + 8\frac{4}{5} = b$ $-\frac{151}{20}$ OR $-7\frac{19}{20}$
- 14. $-5\frac{2}{3} + \left(-1\frac{1}{9}\right) = r$ $-\frac{61}{9}$ OR $-6\frac{7}{9}$
- 15. $8\frac{7}{9} + 6\frac{1}{5} = a$ $\frac{674}{45}$ OR $14\frac{44}{45}$
- 16. $-21\frac{4}{7} + 8\frac{11}{21} = m$ $-\frac{274}{21}$ OR $-13\frac{1}{21}$
- 17. $52\frac{12}{17} + \left(-15\frac{8}{34}\right) = d$ $\frac{637}{17}$ OR $37\frac{8}{17}$
- 18. $-4\frac{3}{4} + 6\frac{5}{8} + \left(-4\frac{1}{16}\right) = k$ $-\frac{35}{16}$ OR $-2\frac{7}{16}$

State the property shown.

- 19. $3\frac{1}{4} + \left(-3\frac{1}{4}\right) = 0$
- 20. $\left(-\frac{1}{2} + \frac{3}{4}\right) + \frac{5}{6} = -\frac{1}{2} + \left(\frac{3}{4} + \frac{5}{6}\right)$
- 21. $-\frac{5}{7} + \frac{1}{3}$ is rational
- 22. $8\frac{2}{3} + 0 = 8\frac{2}{3}$
- 23. $\frac{3}{4} + \left(-\frac{5}{7}\right) = -\frac{5}{7} + \frac{3}{4}$

Solve each of the following. Write your answers in simplest form.

- 24. $5 - 2\frac{1}{3} = p$ $\frac{8}{3}$ OR $2\frac{2}{3}$
- 25. $-5\frac{2}{3} - 8 = d$ $-\frac{41}{3}$ OR $-13\frac{2}{3}$
- 26. $-9\frac{1}{3} - \left(6\frac{2}{3}\right) = b$ -16
- 27. $-11\frac{1}{2} - \left(-16\frac{1}{2}\right) = c$ 5
- 28. $t = -4\frac{1}{5} - \left(-3\frac{7}{10}\right)$ $-\frac{1}{2}$
- 29. $r = 8\frac{2}{5} - 3\frac{1}{2}$ $\frac{49}{10}$ OR $4\frac{9}{10}$
- 30. $x = 7\frac{1}{5} - \left(-3\frac{3}{4}\right)$ $\frac{219}{20}$ OR $10\frac{19}{20}$
- 31. $3\frac{1}{7} - 8\frac{5}{6} = h$ $-\frac{239}{42}$ OR $-5\frac{29}{42}$
- 32. $-12\frac{5}{8} - \left(-3\frac{1}{4}\right) = k$ $-\frac{75}{8}$ OR $-9\frac{3}{8}$

Extra Practice Answer Key

$$\textcircled{1} \quad \boxed{\frac{4}{5} + (-\frac{7}{5})}$$

$$\frac{4}{5} - \frac{7}{5}$$

$$\frac{-3}{5}$$

$$\textcircled{2} \quad \boxed{-\frac{5}{4} + (-\frac{7}{4})}$$

$$-\frac{5}{4} - \frac{7}{4}$$

$$-\frac{12}{4}$$

$$\textcircled{-3}$$

$$\textcircled{3} \quad \boxed{-\frac{5}{8} + \frac{1}{6}}$$

$$-\frac{15}{24} + \frac{4}{24}$$

$$\frac{-11}{24}$$

$$\textcircled{4} \quad \boxed{-\frac{1}{2} + (-\frac{3}{4})}$$

$$-\frac{1}{2} - \frac{3}{4}$$

$$-\frac{2}{4} - \frac{3}{4}$$

$$\frac{-5}{4}$$

$$\textcircled{5} \quad \boxed{4\frac{1}{2} + (-3\frac{2}{3})}$$

$$4\frac{1}{2} - 3\frac{2}{3}$$

$$\frac{9}{2} - \frac{11}{3}$$

$$\frac{27}{6} - \frac{22}{6}$$

$$\frac{5}{6}$$

$$\textcircled{6} \quad \boxed{-5\frac{2}{3} + (-8\frac{1}{2})}$$

$$-5\frac{2}{3} - 8\frac{1}{2}$$

$$-\frac{17}{3} - \frac{17}{2}$$

$$-\frac{34}{6} - \frac{51}{6}$$

$$\frac{-85}{6}$$

$$\textcircled{7} \quad -10 + 7\frac{1}{3}$$

$$\boxed{-\frac{10}{1} + \frac{22}{3}}$$

$$-\frac{30}{3} + \frac{22}{3}$$

$$\frac{-8}{3}$$

$$\textcircled{8} \quad \boxed{-1\frac{2}{7} + (-5\frac{3}{14})}$$

$$-1\frac{2}{7} - 5\frac{3}{14}$$

$$-\frac{9}{7} - \frac{73}{14}$$

$$-\frac{18}{14} - \frac{73}{14}$$

$$-\frac{91}{14} \div \frac{7}{7} = \frac{-13}{2}$$

$$\textcircled{9} \quad \boxed{9\frac{5}{6} + (-8\frac{3}{4})}$$

$$9\frac{5}{6} - 8\frac{3}{4}$$

$$\frac{59}{6} - \frac{35}{4}$$

$$\frac{118}{12} - \frac{105}{12}$$

$$\frac{13}{12}$$

$$\textcircled{10} \quad -\frac{5}{8} + \frac{7}{24}$$

$$\boxed{-\frac{15}{24} + \frac{7}{24}}$$

$$-\frac{8}{24} \div \frac{8}{8} = \frac{-1}{3}$$

$$\textcircled{11} \quad \boxed{-6\frac{1}{2} + (-4\frac{2}{3})}$$

$$-6\frac{1}{2} - 4\frac{2}{3}$$

$$-\frac{13}{2} - \frac{14}{3}$$

$$-\frac{39}{6} - \frac{28}{6}$$

$$\frac{-67}{6}$$

$$\textcircled{12} \quad \boxed{-1\frac{3}{11} + (-5\frac{4}{5})}$$

$$-1\frac{3}{11} - 5\frac{4}{5}$$

$$-\frac{14}{11} - \frac{29}{5}$$

$$-\frac{70}{55} - \frac{319}{55}$$

$$\frac{-389}{55}$$

$$\begin{array}{r} 29 \\ \times 11 \\ \hline 29 \\ + 29 \\ \hline 219 \end{array}$$

$$\textcircled{13} \quad \boxed{-16\frac{3}{4} + 8\frac{4}{5}}$$

$$-\frac{67}{4} + \frac{44}{5}$$

$$-\frac{335}{20} + \frac{176}{20}$$

$$\frac{-159}{20}$$

$$\begin{array}{r} 212 \\ 335 \\ - 176 \\ \hline 159 \end{array}$$

14 $-5\frac{2}{3} + (-1\frac{1}{9})$
 $-5\frac{2}{3} - 1\frac{1}{9}$
 $\frac{-17}{3} - \frac{10}{9}$
 $\frac{-51}{9} - \frac{10}{9}$
 $\frac{-61}{9}$

15 $8\frac{7}{9} + 6\frac{1}{5}$
 $\frac{79}{9} + \frac{31}{5}$
 $\frac{395}{45} + \frac{279}{45}$
 $\frac{674}{45}$

16 $-21\frac{4}{7} + 8\frac{11}{21}$
 $-\frac{151}{7} + \frac{179}{21}$
 $-\frac{453}{21} + \frac{179}{21}$
 $\frac{-274}{21}$

$\frac{314}{21}$
 $\frac{-179}{21}$
 $\frac{274}{21}$

17 * $52\frac{12}{17} + (-15\frac{8}{34})$
 $52\frac{12}{17} - 15\frac{8}{34}$
 $52\frac{12}{17} = 52\frac{24}{34}$
 $52\frac{24}{34} - 15\frac{8}{34}$
 $37\frac{16}{34} = 37\frac{8}{17}$

18 $-4\frac{3}{4} + 6\frac{5}{8} + (-4\frac{1}{16})$
 $-\frac{19}{4} + \frac{53}{8} + (-\frac{65}{16})$
 $-\frac{76}{16} + \frac{106}{16} + (-\frac{65}{16})$
 $\frac{-35}{16}$

24 $5 - 2\frac{1}{3}$
 $\frac{5}{1} - \frac{7}{3}$
 $\frac{15}{3} - \frac{7}{3}$
 $\frac{8}{3}$

25 $-5\frac{2}{3} - 8$
 $-\frac{17}{3} - \frac{8}{1}$
 $-\frac{17}{3} - \frac{24}{3}$
 $\frac{-41}{3}$

26 $-9\frac{1}{3} - (6\frac{2}{3})$
 $-\frac{28}{3} - \frac{20}{3}$
 $-\frac{48}{3}$
 -16

(27) $-11\frac{1}{2} - (-16\frac{1}{2})$
 $-11\frac{1}{2} + 16\frac{1}{2}$
 $\frac{-23}{2} + \frac{33}{2}$
 $\frac{10}{2}$
 (5)

(28) $-4\frac{1}{5} - (-8\frac{7}{10})$
 $-\frac{21}{5} + \frac{37}{10}$
 $-\frac{42}{10} + \frac{37}{10}$
 $\frac{-5}{10} \div \frac{5}{5}$
 $-\frac{1}{2}$

(29) $8\frac{2}{5} - 3\frac{1}{2}$
 $\frac{42}{5} - \frac{7}{2}$
 $\frac{84}{10} - \frac{35}{10}$
 $\frac{49}{10}$

(30) $7\frac{1}{3} - (-3\frac{3}{4})$
 $7\frac{1}{3} + 3\frac{3}{4}$
 $\frac{36}{5} + \frac{15}{4}$
 $\frac{144}{20} + \frac{75}{20}$
 $\frac{219}{20}$

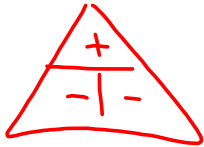
(31) $3\frac{1}{7} - 8\frac{5}{6}$
 $\frac{22}{7} - \frac{53}{6}$
 $\frac{132}{42} - \frac{371}{42}$
 $\frac{-239}{42}$
 $\begin{array}{r} 371 \\ -132 \\ \hline 239 \end{array}$

(32) $-12\frac{5}{8} - (-3\frac{1}{4})$
 $-\frac{101}{8} + \frac{13}{4}$
 $-\frac{101}{8} + \frac{26}{8}$
 $\frac{-75}{8}$

Aim: SWBAT multiply and divide fractions and mixed numbers with signs.

Do Now: Fill in the rules for multiplying and dividing integers.

Same Signs - Positive Different Signs - Negative



Multiplying Fractions and Mixed Numbers

Step 1) Convert mixed numbers to fractions.

Step 2) Cancel.

Step 3) Multiply the numerators to get the new numerator.
Multiply denominators to get the new denominator.

Step 4) Write the answer in simplest form.

Example 1) $\frac{2}{11} \cdot \frac{-1}{4} = \frac{-2}{44}$

Example 2) $\frac{3}{5} \cdot \frac{-2}{3} = \frac{-2}{5}$

* Example 3) $\frac{6}{1} \cdot \frac{-3}{8} = \frac{-18}{8}$

Example 4) $2\frac{1}{2} \cdot 1\frac{2}{5} = \frac{7}{2}$ or $3\frac{1}{2}$

Example 5) $\frac{5}{7} \cdot 1\frac{3}{5} = \frac{8}{7}$

Example 6) $-2\frac{1}{6} \cdot 1\frac{3}{5} = \frac{-52}{15}$

$\frac{8}{7} \cdot \frac{8}{8} = \frac{8}{7}$

$\frac{-13}{3} \cdot \frac{8}{5} = \frac{-52}{15}$

Dividing Fractions and Mixed Numbers

Step 1) Convert mixed numbers to fractions.

Step 2) KEEP the first fraction, CHANGE division to multiplication, FLIP the second fraction to its reciprocal.

Step 3) Cancel.

Step 4) Multiply the numerators to get the new numerator.
Multiply denominators to get the new denominator.

Step 5) Write the answer in simplest form.

Example 1) $\frac{2}{5} \div \frac{3}{4} = \frac{8}{15}$

$$\frac{2}{5} \cdot \frac{4}{3} = \frac{8}{15}$$

Example 2) $-\frac{3}{8} \div \frac{9}{10} = -\frac{5}{12}$

$$-\frac{3}{8} \cdot \frac{10}{9} = -\frac{5}{12}$$

Example 3) $21 \div -\frac{3}{4} = -28$

$$21 \cdot -\frac{4}{3} = -28$$

Example 4) $-5\frac{2}{5} \div -2\frac{1}{10} = \frac{18}{7}$

$$-5\frac{2}{5} \div -2\frac{1}{10} = 2\frac{4}{7}$$

Example 5) $\frac{4}{5} \div -\frac{6}{1} = -\frac{2}{15}$

$$\frac{4}{5} \cdot -\frac{1}{6} = -\frac{2}{15}$$

Example 6) $-10\frac{1}{5} \div 3\frac{3}{15} = -\frac{51}{16}$

$$-10\frac{1}{5} \div 3\frac{3}{15} = -\frac{51}{16}$$

HOMEWORK

Evaluate. Express the answer in simplest form.

	A	B	C	D
1	$\frac{12}{20} \cdot \frac{5}{6} = \underline{\hspace{2cm}}$	$\frac{6}{7} \div \frac{1}{3} = \underline{\hspace{2cm}}$	$\frac{-12}{25} \cdot \frac{5}{8} = \underline{\hspace{2cm}}$	$\frac{-12}{60} \cdot \frac{2}{10} = \underline{\hspace{2cm}}$
2	$-1\frac{1}{8} \cdot 2\frac{2}{3} = \underline{\hspace{2cm}}$	$-1\frac{5}{6} \cdot -1\frac{5}{11} = \underline{\hspace{2cm}}$	$900 \cdot \frac{8}{9} = \underline{\hspace{2cm}}$	$\frac{-2}{5} \div \frac{2}{7} = \underline{\hspace{2cm}}$
3	$-1\frac{1}{2} \div 2\frac{1}{3} = \underline{\hspace{2cm}}$	$-\frac{4}{5} \div \frac{7}{10} = \underline{\hspace{2cm}}$	$-1\frac{3}{4} \div 2\frac{1}{3} = \underline{\hspace{2cm}}$	$\frac{-2}{5} \div -5 = \underline{\hspace{2cm}}$
4	$4\frac{1}{2} \cdot -4\frac{1}{3} \cdot \frac{5}{6} = \underline{\hspace{2cm}}$			What is the product of $\frac{12}{20}$ and $\frac{5}{6}$?
5	$\frac{4}{5} \cdot 4\frac{3}{8} \div \frac{6}{12} = \underline{\hspace{2cm}}$			