Section 3.2: Adding

5. Determine each sum.

a) $-1.2 + (-0.3)$

$= -1.5$

c) $-23.6 - 4.57$

$= -28.17$

6. A technician checked the temperature of a freezer and found that it was $-15.7°C$. She noted that the temperature had dropped $7.8°C$ from the day before.

a) What was the temperature the day before?

$-15.7 + (-7.8)$

$= -23.5$

7. Determine each sum.

a) $\frac{3}{4} + \frac{7}{8}$

$= \frac{6}{8} + \frac{7}{8}$

$= \frac{13}{8}$

b) $-1\frac{1}{2} + 3\frac{1}{3}$

$= \frac{-3}{2} + \frac{10}{3}$

$= \frac{-9}{6} + \frac{20}{6}$

$= \frac{11}{6}$

c) $-4\frac{5}{6} + \left(-1\frac{5}{12}\right)$

$= \frac{-29}{6} + \frac{-17}{12}$

$= \frac{-58}{12} + \frac{-17}{12}$

$= \frac{-75}{12}$

$= -6\frac{3}{12}$

$= -6\frac{1}{4}$

Section 3.3: Subtracting

8. Determine each difference.

a) $-3.4 - (-4.8)$

$= 1.4$

d) $63.2 - 80.02$

$= -16.82$

10. Determine each difference.

b) $-\frac{5}{8} - \left(-\frac{7}{5}\right)$

$= \frac{-25}{40} - \frac{-56}{40}$

$= \frac{31}{40}$

c) $3\frac{5}{7} - \left(-6\frac{9}{10}\right)$

$= \frac{26}{7} - \frac{-69}{10}$

$= \frac{260}{70} + \frac{483}{7}$

$= \frac{743}{70}$

$= 10\frac{43}{70}$

Section 3.4: Multiply

14. Determine each product.

b) $(-4.1)(2.3)$

$= -9.43$

d) $1\frac{3}{5} \times \left(-2\frac{1}{2}\right)$

$\frac{8}{5} \times \frac{-5}{2}$

$\frac{4}{1} \times \frac{-1}{1}$

$= -4$

Section 3.5: Dividing

16. ~~Predict which expressions have a value between -1 and 1~~. Calculate each quotient to check.

a) $(-2.2) \div 0.4$

$= -5.5$

c) $\frac{9}{10} \div \left(-\frac{3}{2}\right)$

$\frac{9}{10} \times \frac{-2}{3}$

$\frac{3}{5} \times \frac{-1}{1}$

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

19. Determine each quotient.

b) $(-20.6) \div (-0.9)$

$= 22.9$

c) $\left(-\frac{9}{11}\right) \div \left(\frac{7}{5}\right)$

$= -\frac{9}{11} \times \frac{5}{7}$

$= -\frac{45}{77}$

Section 3.6: BEDMAS

21. Evaluate

a) $-\frac{3}{5}+\left[\frac{1}{3}\times\left(-\frac{3}{4}\right)\right]$

$\frac{-3}{5}+\left[\frac{1}{1}\times\frac{-1}{4}\right]$

$\frac{-3}{5}+\left[\frac{-1}{4}\right]$

$=\frac{-12}{20}+\frac{-5}{20}$

$=\frac{-17}{20}$

b) $\left(-\frac{3}{5}+\frac{1}{3}\right)\times\left(-\frac{3}{4}\right)$

$\frac{-9}{15}+\frac{5}{15}\times\frac{-3}{4}$

$\frac{-4}{15}\times\frac{-3}{4}$

$\frac{-1}{5}\times\frac{-1}{1}$

$=\frac{1}{5}$

c) $-\left(-\frac{3}{5}+\frac{1}{3}\right)\times\left(-\frac{3}{4}\right)$

$-\left(\frac{-9}{15}+\frac{5}{15}\right)\times\frac{-3}{4}$

$-\left(\frac{-4}{15}\right)\times\frac{-3}{4}$

$-\left(\frac{-1}{5}\right)\times\frac{-1}{1}$

$-\left(\frac{1}{5}\right)$

$=-\frac{1}{5}$

23. Evaluate each expression. Show your work to illustrate the order of operations.

a) $-1.2 \div (0.6) - [6.3 + (-3.4)]$

$-1.2 \div (0.6) - [\quad 2.9 \quad]$

$-2 - [2.9]$

$= -4.9$

c) $-\frac{4}{5} \div \left[\frac{1}{2} + \left(-\frac{1}{6}\right)\left(-\frac{1}{6}\right) \times \frac{1}{4}\right]$

$-\frac{4}{5} \div \left[\frac{1}{2} + \frac{1}{36} \times \frac{1}{4}\right]$

$-\frac{4}{5} \div \left[\frac{1}{2} + \frac{1}{144}\right]$

$-\frac{4}{5} \div \left[\frac{72}{144} + \frac{1}{144}\right]$

$-\frac{4}{5} \div \frac{73}{144}$

$-\frac{4}{5} \times \frac{144}{73}$

$= \frac{-576}{365}$

d) $\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) \div \frac{2}{9} - \left(-\frac{4}{5}\right)$

$\frac{4}{9} \div \frac{2}{9} - \left(-\frac{4}{5}\right)$

$= \frac{4}{9} \times \frac{9}{2} - \left(\frac{-4}{5}\right)$

$= \frac{2}{1} \times \frac{1}{1} - \left(\frac{-4}{5}\right)$

$= \frac{2}{1} - \left(\frac{-4}{5}\right)$

$= \frac{10}{5} + \frac{4}{5}$

$= \frac{14}{5}$

$= 2\frac{4}{5}$

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13. Use a calculator to evaluate. Write the answers to the nearest hundredth where necessary.

c) $\dfrac{0.67 - 4.2 \div (-0.2)}{(-7.3 + 8.6)^2}$

Top

$0.67 - 4.2 \div (-0.2)$

$0.67 - (-21)$

21.67

Bottom

$(-7.3 + 8.6)^2$

$(1.3)^2$

$= 1.69$

$\dfrac{\text{Top}}{\text{Bottom}} = \dfrac{21.67}{1.69} \doteq 12.82$

13. Use a calculator to evaluate. Write the answers to the nearest hundredth where necessary.

d) $$\frac{8.9 \times (-3.1 + 22.7)^2 + 4.7}{(-9.6) \div 0.04 - 0.4}$$

Top

$8.9 \times (-3.1 + 22.7)^2 + 4.7$

$8.9 \times (19.6)^2 + 4.7$

$8.9 \times 384.16 + 4.7$

$3419.024 + 4.7$

3423.724

$(-9.6) \div 0.04 - 0.4$

$-240 - 0.4$

$= -240.04$

$$\frac{\text{Top}}{\text{Bottom}} = \frac{3423.724}{-240.04} = -14.24$$