

Alum Rock Union Elementary School District
Mathematics Benchmark Assessment #2
Study Guide
2007-2009
SIXTH GRADE

Lesson 3.3 Adding and Subtracting Mixed Numbers

Example A:

$$\begin{aligned}
 & 4\frac{1}{2} + 3\frac{1}{4} \\
 &= \frac{9}{2} + \frac{13}{4} \quad \text{***Use the bubble method} \\
 & \quad \text{to find LCM (2,4) = 4} \\
 &= \left(\frac{9}{2} \bullet \frac{2}{2}\right) + \left(\frac{13}{4} \bullet \frac{1}{1}\right) \\
 &= \frac{18}{4} + \frac{13}{4} \\
 &= \frac{18+13}{4} \\
 &= \frac{31}{4}
 \end{aligned}$$

Example B:

$$\begin{aligned}
 & 2 - 1\frac{3}{4} \\
 &= \frac{2}{1} - \frac{7}{4} \quad \text{***Use the bubble method} \\
 & \quad \text{to find LCM (1,4) = 4} \\
 &= \left(\frac{2}{1} \bullet \frac{4}{4}\right) - \left(\frac{7}{4} \bullet \frac{1}{1}\right) \\
 &= \frac{8}{4} - \frac{7}{4} \\
 &= \frac{8-7}{4} \\
 &= \frac{1}{4}
 \end{aligned}$$

YOU TRY:

1) $8\frac{1}{3} + 4\frac{1}{6}$

2) $5\frac{1}{10} - 3\frac{1}{3}$

3) $5 - 3\frac{5}{6}$

Lesson 3.5 Dividing Fractions

Example C:

$$\begin{aligned}
 & \frac{2}{3} \div \frac{4}{5} \\
 &= \frac{2}{3} \bullet \frac{5}{4} \\
 &= \frac{2 \bullet 5}{3 \bullet 4} \\
 &= \frac{2 \bullet 5}{3 \bullet 2 \bullet 2} \\
 &= \frac{5}{6}
 \end{aligned}$$

Example D:

$$\begin{aligned}
 & \frac{3}{5} \div \frac{6}{5} \\
 &= \frac{3}{5} \bullet \frac{5}{6} \\
 &= \frac{3 \bullet 5}{5 \bullet 6} \\
 &= \frac{3 \bullet 5}{5 \bullet 2 \bullet 3} \\
 &= \frac{1}{2}
 \end{aligned}$$

YOU TRY:

4) $\frac{3}{7} \div \frac{6}{11}$

5) $\frac{3}{8} \div \frac{2}{5}$

6) $1\frac{2}{5} \div 1\frac{2}{3}$

Lesson 3.6 The Distributive Property

Example E:

$$\begin{aligned} & 5\left(x + \frac{3}{5}\right) \\ &= 5(x) + \frac{5}{1}\left(\frac{3}{5}\right) \\ &= 5x + \frac{15}{5} \\ &= 5x + 3 \end{aligned}$$

Example F:

$$\begin{aligned} & 2(4.3 - x) \\ &= 2(4.3) - 2(x) \\ &= 8.6 - 2x \end{aligned}$$

YOU TRY:

7) $3\left(x + \frac{2}{3}\right)$

8) $3(m + 4)$

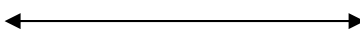
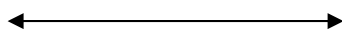
Lesson 4.1 Integers and the Number Line

You Try:

Use a number line to order the integers from least to greatest.

9) -2, -4, -6, 6, 0

10) -1, -5, -3, 0, 2

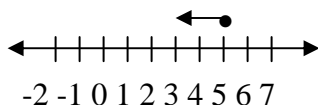


Lesson 4.2- 4.4 Adding and Subtracting Integers

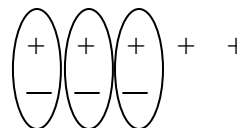
Example G:

$$\begin{aligned} & 5 + (-2) \\ &= 3 \end{aligned}$$

Number Line



Chip Model



$$5 + (-2) = 3$$

You Try:

11) $-10 + (-4) + 25 + (-8)$

12) $-2 - 2$

13) $-5 + (-2)$

Lesson 4.5 - 4.6 Multiplying and Dividing Integers

14) $(9)(-2)(-5)$ 15) $-7 \bullet (-8)$ 16) $0 \div -5$ 17) $\frac{-30}{-6}$

Lesson 5.1 Writing Expressions

18) 9 more than x 19) The product of 5 and a number 20) 5 less than a number

Lesson 5.3- 5.4 Solving Addition and Subtraction Equations

Example H:

$$\begin{array}{r} 10 + a = 2 \\ -10 \quad = -10 \\ \hline 0 + a = -8 \\ a = -8 \end{array}$$

Example I:

$$\begin{array}{r} m - 2.9 = -17 \\ + 2.9 = +2.9 \\ \hline m + 0 = -14.1 \\ m = -14.1 \end{array}$$

You Try:

21) $-12 = 11 + p$ 22) $k - \frac{1}{2} = \frac{3}{4}$

Lesson 5.5- 5.6 Solving Multiplication and Division Equations

Example J:

$$\begin{array}{r} -14r = -42 \\ \frac{-14}{-14} r = \frac{-42}{-14} \\ r = 3 \end{array}$$

Example K:

$$\begin{array}{r} \frac{n}{5} = -5 \\ \frac{5}{1} \bullet \frac{n}{5} = -5 \bullet \frac{5}{1} \\ n = -25 \end{array}$$

You Try:

23) $-k = 22$ 24) $-4y = -68$ 25) $-15 = \frac{x}{-8}$

Lesson 5.7 Solving Two-Step Equations

Example L:

$$\begin{aligned} -3x + 5 &= 11 \\ -5 &= -5 \\ \hline -3x &= 6 \\ \frac{-3x}{-3} &= \frac{6}{-3} \\ x &= -2 \end{aligned}$$

Example M:

$$\begin{aligned} \frac{d}{6} - 4 &= -12 \\ +4 &= +4 \\ \hline \frac{d}{6} &= -8 \\ \frac{6}{1} \cdot \frac{d}{6} &= -8 \cdot \frac{6}{1} \\ d &= \frac{-48}{1} \\ d &= -48 \end{aligned}$$

You Try:

26) $\frac{k}{-5} + 11 = 6$

27) $-22 = 2r - 4$

Lesson 7.1 Percents, Fractions, and Decimals

Example N:

Write fractions as a percent.

$$\begin{aligned} \frac{1}{4} \quad \text{OR} \quad \frac{1}{4} \\ = \frac{1 \cdot 25}{4 \cdot 25} \quad \left| \quad \frac{1}{4} = \frac{x}{100} \right. \\ = \frac{25}{100} \quad \left| \quad 1(100) = 4x \right. \\ = 25\% \quad \left| \quad \frac{100}{4} = \frac{4x}{4} \right. \\ \quad \quad \quad \left| \quad 25\% = x \right. \end{aligned}$$

Example O:

Write decimal as a percent.

$$\begin{aligned} 0.8 \quad \text{OR} \quad 0.8 \\ = \frac{8}{10} \quad \left| \quad \frac{8}{10} = \frac{x}{100} \right. \\ = \frac{8 \cdot 10}{10 \cdot 10} \quad \left| \quad 10x = 8(100) \right. \\ = \frac{80}{100} \quad \left| \quad \frac{10x}{10} = \frac{800}{10} \right. \\ = 80\% \quad \left| \quad x = 80\% \right. \end{aligned}$$

Example P:

Write percent as a Fraction/percent

$$86\% = \frac{86}{100} = 0.86$$

You Try:

28) Write the percent as a fraction and decimal:

5%

29) Write the fraction as a percent:

$\frac{7}{8}$

30) Write the decimal as a percent:

0.346

Lesson 7.2 Finding a Percent of a Number

Example Q:

What is 16% of 50?

$$\begin{array}{cccccc} \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\ x & = & 0.16 & \cdot & 50 & \end{array}$$

$$x = 8$$

You Try:

31) What is 15% of 240?

32) What is 34% of 75?

Example R:

What percent of 10 is 5?

$$\begin{array}{cccccc} \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow \\ x & \cdot & 10 & = & 5 & \end{array}$$

$$\begin{aligned} \frac{10x}{10} &= \frac{5}{10} \\ x &= \frac{5}{10} \\ x &= \frac{1}{2} \end{aligned}$$

Lesson 7.6 Simple Interest

Example S:

Interest = Principal • Rate • Time

$$I = Prt$$

Note: *Time must be expressed in years.*

You borrow \$1500 from a friend for the down payment on a car. Your friend charges you an annual interest rate of 8%. Find the simple interest you will pay in 1 year.

Solution:

$$\begin{aligned} \text{Interest} &= I \\ \text{Principal} &= \$1500 \\ \text{Rate} &= 0.08 \\ \text{Time} &= 1 \\ I &= 120 \end{aligned}$$

$\begin{aligned} I &= Prt \\ I &= 1500(0.08)(1) \end{aligned}$
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The simple interest you will pay in 1 year is \$120.

You Try:

33) You borrow \$150 from a friend for a new bike. Your friend charges you an annual interest rate of 8%. Find the interest you will pay in 2 year.

ANSWERS

1) $12\frac{1}{2}$	2) $\frac{53}{30}$	3) $\frac{7}{6}$	4) $\frac{11}{14}$	5) $\frac{15}{16}$
6) $\frac{21}{25}$	7) $3x+2$	8) $3m+12$	9) -6, -4, -2, 0, 6	10) -5, -3, -1, 0, 2
11) 3	12) -4	13) -7	14) 90	15) 56
16) 0	17) 5	18) $x+9$	19) $5x$ or $5 \bullet x$	20) $x-5$
21) -23	22) $\frac{5}{4}$ or $1\frac{1}{4}$	23) -22	24) 17	25) 120
26) 25	27) -9	28) $\frac{5}{100}$ or $\frac{1}{20}$; 0.05	29) 87.5%	30) 34.6%
31) 36	32) 18	33) \$12		