Study Guide

BRIDGERLAND APPLIED TECHNOLOGY COLLEGE

BASIC MATH

This is a sample of questions; the assessment will have more items and may be slightly different from those included here.

CALCULATORS

Calculators may be used, except for whole numbers.

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Basic Whole Numbers

- Calculators may be used, except for whole numbers.
- 26 questions with 60 minutes to finish

Example

$$\begin{array}{r} {\scriptstyle 11} \\ 568 \\ +194 \\ \hline 762 \end{array}$$

8+4=12. Put 2 in the ones place, "carry" 1 group of ten to the tens place.

$$\begin{array}{r} {\scriptstyle 7\,1\,1} \\ 8\,3\,7 \\ -\,1\,4\,2 \\ \hline 6\,9\,5 \end{array}$$

3 is smaller than 4. "Borrow" from the hundreds place. 13-4=9.

1) $\begin{array}{r} 469 \\ +\ 384 \\ \hline \end{array}$

2) $\begin{array}{r} 23{,}417 \\ 5{,}609 \\ +\ 12{,}488 \\ \hline \end{array}$

3) $\begin{array}{r} 30{,}142 \\ -\ \ 78 \\ \hline \end{array}$

4) $\begin{array}{r} 10{,}001 \\ -\ 3{,}973 \\ \hline \end{array}$

5) $\begin{array}{r} 143 \\ \times\ \ 6 \\ \hline \end{array}$

Example

3,218 ÷ 64

A problem written in this form should be rewritten and worked out this way →

$$\begin{array}{r} 50\text{ R }18 \\ 64\overline{)3{,}218} \\ -320 \\ \hline 18 \\ -\ \ 0 \\ \hline 18 \end{array}$$

6) $7\overline{)56}$

7) $256\overline{)27{,}399}$

8) 326 ÷ 150

9) 77,768 ÷ 77

DECIMALS

- Calculators may be used, except for whole numbers.
- 12 questions and 45 minutes to finish

Example

Round 62.137 to the nearest hundredth. 62.13<u>7</u> → 62.14

a. Underline the digit in the place to be rounded.

b. The digit to the right of the underlined digit is the decision digit. In this example, it is a 7.

c. If the decision digit is 5, or greater than 5, then add 1 to the underlined digit. Otherwise, leave the underlined digit the same. Here, 7 is greater than 5. So add 1 to 3.

d. Drop all of the digits to the right of the underlined digit. Answer: 62.14

Round each number to the indicated place value.

1) 8.037 Nearest hundredth _____

2) 5.3609 Nearest tenth _____

3) 7.1846 Nearest thousandth _____

Example

Ordering Decimals. Order smallest to largest: 5, .51, .005, .5

a. Make all the decimals the same length by adding zeros without changing the values:
5.000, 0.510, 0.005, 0.500

b. Arrange these values in the specified order (in this case smallest to largest):
0.005, 0.500, 0.510, 5.000

c. Rewrite the values in their original form. Answer: .005, .5, .51, 5

Put the following decimals in order from smallest to largest.

4) 9.4 .94 9.04 94 0.944

Example

Determine the following. When necessary, round the answer to the nearest thousandth.

For addition or subtraction, line up the decimal points. For division, move the decimal point before starting.

a) 6.2 – 3.189

$$\begin{array}{r} {\scriptstyle 1\ 9\ 1\ \ \ } \\ 6.2\overset{1}{0}\overset{9}{0}\overset{1}{0} \\ -\,3.189 \\ \hline 3.011 \end{array}$$

b) 1.026 ÷ .27

$$\begin{array}{r} 3.8 \\ .27\overline{)1.02.6} \\ -\ 81 \\ \hline 216 \\ -216 \\ \hline 0 \end{array}$$

5) 420.45 + 83 + 1.9 + .065

6) 876.2 – 7.631

7) 4.73 x .009

8) 17.283 ÷ 0.032

FRACTIONS

- Reduce your answers
- 12 questions and 45 minutes to finish

Example

Reducing Fractions.

a. Divide the numerator (top) and denominator (bottom) by the same number.

b. Keep dividing until the only number that will divide both the numerator and the denominator is 1.

Reduce: $\frac{30}{42}$

$\frac{30 \div 2}{42 \div 2} = \frac{15}{21}$

$\frac{15 \div 3}{21 \div 3} = \boxed{\frac{5}{7}}$

Example

Solve.

For addition or subtraction, get a common denominator.

$\frac{9}{16} - \frac{1}{4}$

$\frac{9}{16} - \frac{4}{16} = \boxed{\frac{5}{16}}$

For division, invert and multiply.

$\frac{7}{10} \div \frac{22}{25}$

$\frac{7}{10} \times \frac{25}{22}$ $\quad \frac{7}{\cancel{10}_{2}} \times \frac{\cancel{25}^{5}}{22} = \boxed{\frac{35}{44}}$

Solve.

1) $\frac{1}{10} + \frac{2}{5}$

2) $9\frac{3}{4} + 5\frac{7}{12}$

3) $13\frac{6}{7} - 5\frac{1}{3}$

4) $\frac{4}{5} - \frac{5}{8}$

5) $23 - 13\frac{7}{12}$

6) $\frac{4}{7} \times \frac{2}{3}$

7) $2\frac{1}{4} \times 3\frac{5}{9}$

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

9) $\frac{3}{5} \div \frac{1}{10}$

10) $4\frac{11}{16} \div 1\frac{11}{24}$

PERCENTS

- Calculators may be used, except for whole numbers.
- 2 questions and 45 minutes to finish

Example

The **box method** is a helpful way to set up any percent problem. Once set up, you **multiply** the two values that appear diagonally from each other. Then **divide** that result by the third value.

18% of what number is 72?

72 part	18 percent
whole	100 100

72 is diagonally across from 100
72 x 100 = 7200
7200 ÷ 18 = 400
Answer: 400

What is 15% of 60?

part	15 percent
60 whole	100 100

15 is diagonally across from 60
15 x 60 = 900
900 ÷ 100 = 9
Answer: 9

$\frac{1}{5}$ is what percent of $\frac{3}{4}$?

$\frac{1}{5}$ part	percent
$\frac{3}{4}$ whole	100 100

$\frac{1}{5}$ is diagonally across from 100

$\frac{1}{5} \times 100 = \frac{1}{5} \times \frac{100}{1} = 20$

$20 \div \frac{3}{4} = \frac{20}{1} \times \frac{4}{3} = \frac{80}{3} = 26.67$

Answer: 26.67%

Solve. When it's necessary, round the answer to the nearest hundredth.

1) What is 25% of 84?

2) What is 17% of 200?

3) 38% of what number is 34.2?

4) 15 is what percent of 96?

5) $\frac{2}{5}$ is what percent of $\frac{7}{8}$?

6) What is 13.9% of $5,854.39?

7) 120% of what number is 77.65?

ANSWER KEY

BASIC WHOLE NUMBERS

1. 853
2. 41,514
3. 30,064
4. 6,028
5. 858
6. 8
7. 107 R 7
8. 2 R 26
9. 1,009 R 75

DECIMALS

1. 8.04
2. 5.4
3. 7.185
4. .94, 0.944, 9.04, 9.4, 94
5. 505.415
6. 868.569
7. 0.043 after rounding
8. 540.094 after rounding

FRACTIONS

1. $\frac{1}{2}$
2. $15\frac{1}{3}$
3. $8\frac{11}{21}$
4. $\frac{7}{40}$
5. $9\frac{5}{12}$
6. $\frac{8}{21}$
7. 8
8. $\frac{9}{16}$
9. 6
10. $3\frac{3}{14}$

PERCENTS

1. 21
2. 34
3. 90
4. 15.63% after rounding
5. 45.71% after rounding
6. $813.76 after rounding
7. 64.71 after rounding