

BASIC MATH
COMPASS SAMPLE ITEMS

These sample items are designed to illustrate the form of the items in the COMPASS battery. They have not been pre-tested and have not been subjected to the content and fairness reviews required for all operational items.

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COMPASS SAMPLE ITEMS Numerical Skills/Prealgebra Placement Test

(Computing an Arithmetic Average)

1. What is the average (arithmetic mean) of 8,7,7,5,3,2, and 2?
 - a. $3\frac{4}{7}$
 - b. $4\frac{5}{6}$
 - c. $4\frac{6}{7}$
 - d. 5
 - e. $6\frac{4}{5}$

(Basic Operations with Decimals)

2. Ben is making wooden toys for the next arts and crafts sale. Each toy costs Ben \$1.80 to make. If he sells toys for \$3.00 each, how many will he have to sell to make a profit of exactly \$36.00?
 - a. 12
 - b. 20
 - c. 30
 - d. 60
 - e. 108

(Basic Operations with Fractions)

3. How many yards of material from a 24-yard length of cloth remain after 3 pieces, each $3\frac{1}{2}$ yards long, and 5 pieces, each $2\frac{1}{4}$ yards long, are removed?
 - a. $2\frac{1}{4}$
 - b. $4\frac{1}{4}$
 - c. $4\frac{5}{6}$
 - d. $10\frac{1}{4}$
 - e. $10\frac{5}{6}$

(Percentages)

4. Phillip charged \$400 worth of goods on his credit card. On his first bill, he was not charged any interest, and he made a payment of \$20. He then charged another \$18 worth of goods. On his second bill a month later, he was charged 2% interest on his entire unpaid balance. How much interest was Phillip charged on his second bill?
- a. \$8.76
 - b. \$7.96
 - c. \$7.60
 - d. \$7.24
 - e. \$6.63

Content Areas

The Numerical Skills/Prealgebra Diagnostic Test can be customized to include assessment of any or all of the following content areas, each of which consists of a pool of at least 20 items:

Basic operations with integers
Basic operations with fractions
Basic operations with decimals
Exponents
Ratios and proportions
Percentages
Averages (arithmetic means)

(Ratio and Proportion)

1. A youth in a fashion design contest made a shirt for herself and a proportional one for a small doll. The youth was 5 feet 5 inches tall, and the doll was 13 inches tall. If the youth's shirt sleeve was 30 inches long, how long, in inches, was the sleeve of the doll's shirt?
- a. $28\frac{1}{6}$
 - b. 17
 - c. 15
 - d. $7\frac{1}{11}$
 - e. 6

(Basic Operations and Fractions)

2. Erin wants to reduce both the length and width of a picture by $\frac{1}{3}$. If the original picture is 12 inches by 6 inches, what will be the dimensions, in inches, of the reduced picture?
- a. 18 by 9
 - b. 12 by 4
 - c. 9 by 4
 - d. 8 by 6
 - e. 8 by 4

(Percentages)

3. Carmen earned \$1,600 last summer. She spent \$224 on a new bicycle, invested \$1,000 in a savings certificate, and put the remaining money in her savings account. What percent of her earnings did she put in her savings account?
- a. 14.0
 - b. 20.6
 - c. 23.5
 - d. 30.7
 - e. 37.6

Sample Test- Numerical Skills

1. $0.05 + 0.30 = ?$
 - a. 0.08
 - b. 0.305
 - c. 0.35
 - d. 0.38
 - e. Not given

2. $0.35 \div 5 = ?$
 - a. 0.07
 - b. 0.70
 - c. 1.75
 - d. 7.00
 - e. Not given

3. On a road map with a scale of $\frac{1}{4}$ inch per 10 miles, the highway from Waukee to Winterset is $1\frac{3}{8}$ inches long. How many miles long is this highway?
 - a. 44
 - b. 55
 - c. 65
 - d. 70
 - e. 90

4. The price of gasoline has increased by 5% during the past month. If the price per gallon a month ago was \$1.20, what is the current price per gallon?
 - a. \$1.24
 - b. \$1.25
 - c. \$1.26
 - d. \$1.70
 - e. \$1.80

5. $-2 |3 - 4 - 5| = ?$
 - a. -12
 - b. -8
 - c. 8
 - d. 12
 - e. 24

6. Which of the following fractions is equivalent to 0.05?

a. $\frac{1}{5}$

b. $\frac{1}{20}$

c. $\frac{1}{25}$

d. $\frac{1}{50}$

e. $\frac{1}{200}$

Sample Test-Percents

Choose the correct answer for each of the following questions.

1. Convert 47% to fractional notation.

- a. 47 b. 47/50 c. 47/100 d. 47/1 e. 100/47

2. Convert 63.5% to decimal notation.

- a. 63,500 b. 0.635 c. 6.35 d. 635 e. 0.0635

3. Convert $\frac{3}{5}\%$ to fractional notation.

- a. 5/300 b. 5/100 c. 3/100 d. 3/1000 e. 3/500

4. Convert 0.405 to percent notation.

- a. 0.004055 b. 4.055 c. 0.405% d. 40.5% e. 405%

5. Convert $\frac{3}{8}$ to percent notation

- a. 2.6% b. 80% c. 30% d. 38% e. 37.5%

6. Convert 3.6 to percent notation.
- a. 3.6% b. 36% c. 360% d. 0.36% e. 0.036%
7. 8 is what percent of 20?
- a. 40% b. 4% c. 8% d. 20% e. 2.5%
8. Suppose a company has a 30% share of the market for a product. In a sample of 60 consumers, how many would be expected to use the company's product?
- a. 200 b. 20 c. 18 d. 1.8 e. 2
9. A baseball team consists of 9 players. If only 4 of the players get a hit during the game, what is the percent of players who got hits?
- a. 44.4% b. 40% c. 38.5% d. 90% e. 2.25%
10. A company has 25 employees in 1996. If it downsized to a total of 21 employees in 1997, what is the percent decrease in the number of employees at the company?
- a. 70% b. 10% c. 25% d. 16% e. 21%

Sample Test-Fractions

Choose the correct answer for each of the following questions.

1. Simplify: $30/12$
- a. $30/12$ b. $5/2$ c. $10/3$ d. $10/4$ e. $7/3$
2. Simplify: $13/39$
- a. 3 b. $13/39$ c. $1/9$ d. $1/26$ e. $1/3$
3. Multiply: $8/9 * 27/2$
- a. $243/16$ b. $16/243$ c. $1/12$ d. $16/3$ e. 12

4. Divide: $11/5 \div 44/15$

- a. $44/5$ b. $11/15$ c. $4/3$ d. $484/75$ e. $3/4$

5. Multiply: $13/6 * 1/39$

- a. $14/15$ b. 18 c. $1/18$ d. 169 e. $1/12$

6. Divide: $15/2 \div 10$

- a. $3/4$ b. $4/3$ c. 75 d. $1/75$ e. $5/2$

7. Add: $4/9 + 2/3$

- a. $8/27$ b. $6/27$ c. $1/2$ d. $10/9$ e. $9/10$

8. Subtract: $5/4 - 1/6$

- a. $13/12$ b. $1/2$ c. $1/3$ d. 13 e. 2

9. Add: $12/7 + 3/2$

- a. $15/14$ b. $5/3$ c. $14/45$ d. $15/9$ e. $45/14$

10. Subtract: $3 - 4/5$

- a. $11/5$ b. $5/11$ c. $1/5$ d. $31/5$ e. $12/5$

Numerical Skills/Prealgebra Placement Test

- 1) c 2) c 3) a 4) b

Numerical Skills/Prealgebra Diagnostic Test

- 1) e 2) e 3) c

Sample Test - Numerical Skills

- 1) c 2) a 3) b
4) c 5) a 6) b

Sample Test - Percents

- 1) c 2) b 3) e 4) d 5) e
6) c 7) a 8) c 9) a 10) d

Sample Test - Fractions

- 1) b 2) e 3) e 4) e 5) c
6) a 7) d 8) a 9) e 10) a