

Percent discount and percent change

3 questions · About 6 minutes · Calculator allowed

Name _____

Date _____

1. A jacket originally costs \$80 and is discounted by 25%. What is the sale price?

- | | |
|----------|---------|
| A. \$65 | B. \$20 |
| C. \$100 | D. \$60 |

2. A store's revenue rises from \$240,000 to \$300,000. What is the percent increase?

- | | |
|--------|---------|
| A. 20% | B. 25% |
| C. 60% | D. 125% |

3. The price of an item rises by 25%. By what percent must the new price decrease to return to the original price?

- | | |
|--------|--------|
| A. 20% | B. 25% |
| C. 30% | D. 75% |

Solve linear equations in one variable

3 questions · About 6 minutes · Calculator allowed

Name _____

Date _____

1. If $3(2x - 5) = 21$, what is x ?

A. 9

B. 6

C. 3

D. 12

2. A repair costs a fixed fee of \$35 plus \$18 per hour. A customer pays \$107 before tax. How many hours of work are charged?

A. 2

B. 3

C. 4

D. 5

3. If $7x - 4 = 3x + 20$, what is $2x + 1$?

A. 6

B. 11

C. 12

D. 13

Slope, intercepts, and rate models

3 questions · About 6 minutes · Calculator allowed

Name

Date

1. A line passes through $(2, 5)$ and $(6, 17)$. What is its slope?

A. 2

B. 3

C. 4

D. 12

2. A tank contains 90 liters at time $t = 0$ and 66 liters at $t = 4$ minutes. If the rate is constant, which model gives the remaining liters?

A. $V(t) = 90 - 6t$

B. $V(t) = 90 - 24t$

c. $V(t) = 66 - 6t$

D. $V(t) = 6t + 90$

- 3.** What is the x -intercept of $y = 3x - 12$?

A. $(-12, 0)$

B. $(0, -12)$

C. $(3, 0)$

D. $(4, 0)$

Ratios, rates, and unit conversion

3 questions · About 6 minutes · Calculator allowed

Name _____

Date _____

1. The ratio of red beads to blue beads is 3: 5. If there are 40 beads altogether, how many are red?

- | | |
|-------|-------|
| A. 8 | B. 15 |
| C. 24 | D. 25 |

2. A machine produces 150 parts in 6 minutes. At the same rate, how many parts does it produce in 10 minutes?

- | | |
|--------|--------|
| A. 200 | B. 225 |
| C. 250 | D. 300 |

3. How many inches are in 3.5 feet? Use 12 inches = 1 foot.

- | | |
|-------|-------|
| A. 24 | B. 36 |
| C. 42 | D. 45 |

Right triangles and trigonometry

3 questions · About 6 minutes · Calculator allowed

Name

Date

1. A right triangle has legs of lengths 6 and 8. What is the hypotenuse length?

A. 7

B. 10

C. 12

D. 14

2. For an acute angle A in a right triangle, the opposite side is 3 and the hypotenuse is 5. What is $\sin(A)$?

A. $\frac{3}{5}$

B. $\frac{4}{5}$

C. $\frac{3}{4}$

D. $\frac{5}{3}$

3. The acute angles A and B of a right triangle are complementary. If $\sin(A) = \frac{7}{25}$, what is $\cos(B)$?

A. $\frac{7}{25}$

B. $\frac{24}{25}$

C. $\frac{7}{24}$

D. $\frac{25}{7}$

Worked answers

Find the first step where your work differs. Then redo the question without looking.

Warmup 1 · Percent discount and percent change

1. D \$60

The remaining price is 75% of \$80: $0.75(80) = \$60$. The \$20 discount is not the sale price.

2. B 25%

The increase is \$60,000. Divide by the original \$240,000: $\frac{60000}{240000} = 0.25$, or 25%.

3. A 20%

If the original price is 100, the new price is 125. A decrease of 25 from 125 is $\frac{25}{125} = 20\%$.

Warmup 2 · Solve linear equations in one variable

1. B 6

Distribute: $6x - 15 = 21$. Add 15 to get $6x = 36$, so $x = 6$. Checking gives $3(12 - 5) = 21$.

2. C 4

Set $35 + 18h = 107$. Then $18h = 72$, so $h = 4$ hours. The fixed fee is paid once.

3. D 13

First solve $4x = 24$, giving $x = 6$. The question asks for $2x + 1$, which is $12 + 1 = 13$.

Warmup 3 · Slope, intercepts, and rate models

1. B 3

Slope is change in y divided by change in x : $\frac{17 - 5}{6 - 2} = \frac{12}{4} = 3$.

2. A $V(t) = 90 - 6t$

The volume drops 24 liters in 4 minutes, a rate of -6 liters per minute. With initial volume 90, $V(t) = 90 - 6t$.

3. D (4, 0)

At an x -intercept, $y = 0$. Solving $0 = 3x - 12$ gives $x = 4$, so the point is (4, 0).

Worked answers

Find the first step where your work differs. Then redo the question without looking.

Warmup 4 · Ratios, rates, and unit conversion

1. B 15

There are $3 + 5 = 8$ equal parts. Each part contains $\frac{40}{8} = 5$ beads, so red beads total $3(5) = 15$.

2. C 250

The rate is $\frac{150}{6} = 25$ parts per minute. In 10 minutes, the machine produces $25(10) = 250$ parts.

3. C 42

Multiply 3.5 feet by 12 inches per foot. The feet cancel, leaving 42 inches.

Warmup 5 · Right triangles and trigonometry

1. B 10

The Pythagorean theorem gives $c^2 = 6^2 + 8^2 = 100$. Taking the positive square root gives $c = 10$.

2. A $\frac{3}{5}$

Sine is opposite divided by hypotenuse. The specified side lengths give $\sin(A) = \frac{3}{5}$.

3. A $\frac{7}{25}$

For complementary angles, $\sin(A) = \cos(B)$. Therefore $\cos(B)$ has the same value, $\frac{7}{25}$.