

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 _____

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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 _____

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