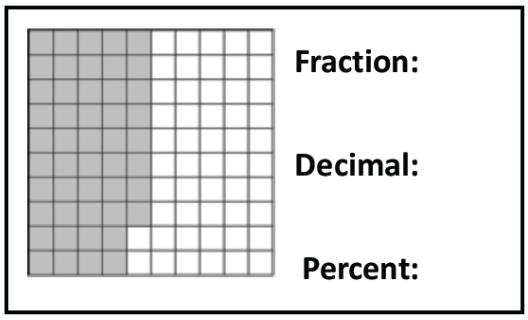
Math: Percent Session #7

A PERCENTAGE is another way of writing a fraction where the denominator is 100. Use the percent symbol (%) to indicate percentage.



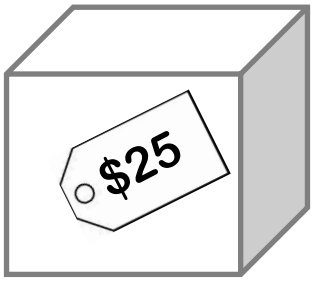
0.21 = _____ %

$\frac{32}{100}$ **= _____ %**

_____ = _____ = _____

Decimal *Fraction*

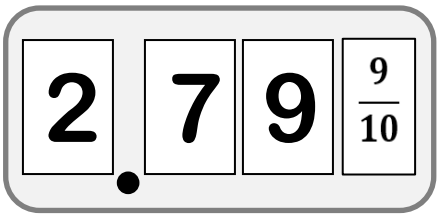
New Price: _____

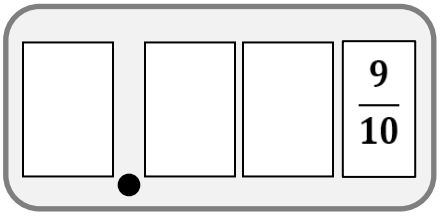


Sales Tax: 10%

Total Price: _____

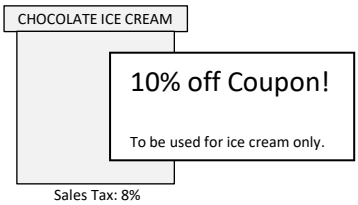
Gas prices are increasing by 35%. What is the new price?





How much is the discount (in %) ?

How much is the ice cream?



How much was our bill for one hot cocoa and one donut?

MENU

Hot Cocoa $1.95

Donut $1.25

Milk $1.15

Sales tax: 6 ¼ %
Suggested Tip: 15%

In 1950, one candy bar cost _____.
Today, that same candy bar is $1.29.

How much did the price increase (as a percentage) ?

PERCENT of Change is how much something increases or decreases compared with its original value.

$$\%\ Change = \frac{amount\ of\ change\ (new - old)}{old}\ x\ 100$$

The bag of chips says 18 oz, but you measure only _____oz. The FDA allows up to a 20% error for food products to be compliant with their labels. Is the chip bag within this limit?

PERCENT Error is a measure of the difference between an estimated value and the actual value expressed as a percentage.

$$\%\ Error = \frac{difference\ (estimated - actual)}{actual}\ x\ 100$$

You inherit $10,000 when you were 6 years old. You decide to invest it and not touch it until you turn 18 years old.

How do you want to invest your money? How much would you have?

Option A: Loan to a Borrower with Simple Interest, _____

Interest is the cost of borrowing money, and it can be calculated in two ways. Simple Interest is only from the principal amount (deposited or borrowed).

Interest = Principal • Rate • Time	Final Amount = Principal + Interest
$I = P\ r\ t$	$A = P + P\ r\ t$

Option B: Put it in a Savings Account with Compounded Interest, _____

Compound Interest is the cost of borrowing money, but the interest earned is not only with the principal but also the interest earns interest!

Final Amount = Principal • (1 + Rate)$^{\text{Time}}$

$$A = P\,(1 + r)^t$$

Name_____

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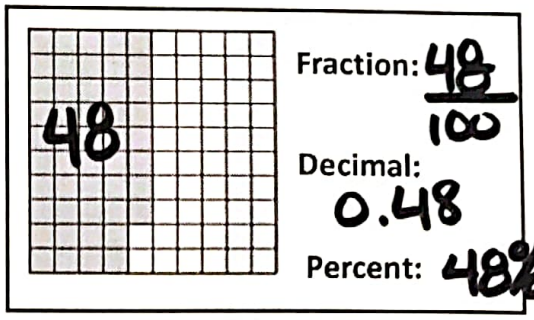
A PERCENTAGE is another way of writing a fraction where the denominator is 100. Use the percent symbol (%) to indicate percentage.



0.21 = 21 %

$\frac{32}{100}$ = 32 %

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

Decimal *Fraction*

100% − 40% = 60%

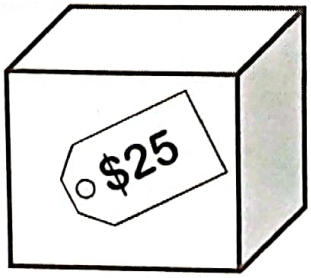
what is 60% of $300?

$x = \frac{60}{100} \cdot 300$

New Price: $180

Method 1 → what is 10% of $25?

$x = (0.1)(25) = 2.5$



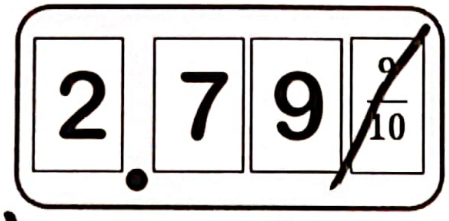
Sales Tax: 10%

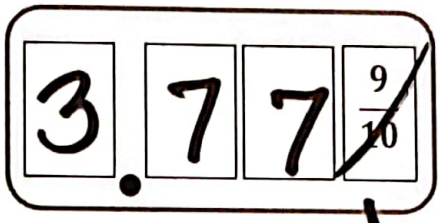
$25.00
+ $2.50
$27.50

Total Price: $27.50

Method 2 → OR: solve this → what is 110% of $25?

Gas prices are increasing by 35%. What is the new price?





Method 1:

$$\frac{x}{2.79} = \frac{135}{100}$$

$$100x = 135(2.79)$$

$$x = \frac{135(2.79)}{100} = \boxed{\$3.77}$$

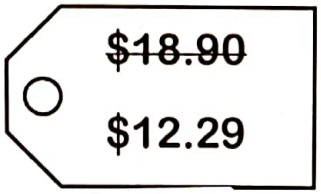
Method 2: what is 135% of 2.79?

$$x = \frac{135}{100}(2.79)$$

$$x = \$3.77$$

How much is the discount (in %)?

DISCOUNT!



$$\begin{array}{r} 18.90 \\ -\ 12.29 \\ \hline \$6.61 \end{array}$$ ← discount

$$\frac{6.61}{18.90} = \frac{x}{100}$$

$$(18.90)x = (100)(6.61)$$

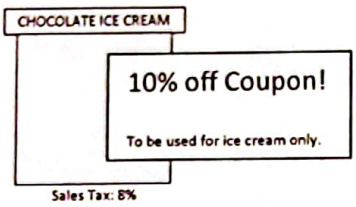
$$x = \frac{(100)(6.61)}{18.90}$$

$x = 35\%$ off (that is the discount)

How much is the ice cream?

$5.29 + 8% − 10%

$5.29 − 2%



what is 1% of 5.29? → 0.0529

2% is 2(0.0529) = 0.1058

so: $5.29
− 0.11
$5.18

How much do we pay for one hot cocoa and one donut?

MENU
Hot Cocoa $1.95
Donut $1.25
Milk $1.15
Sales tax: 6 ¼ %
Suggested Tip: 15%

$1.95
+ $1.25
$3.20 ← subtotal

$6\frac{1}{4}$% tax → 0.20

$3.40

15% tip → + 0.48

$3.88 total amount

tax:
$3.20(0.0625) = 0.20

tip: $3.20(0.15) = 0.48
(tip on subtotal!)

In 1950, one candy bar cost 5¢.
Today, that same candy bar is $1.29.

How much did the price increase (as a percentage) ?

$$\% \text{ change} = \frac{1.29 - 0.05}{0.05} \times 100$$

$$\% \text{ change} = 2{,}480\%$$

PERCENT of Change is how much something increases or decreases compared with its original value.

$$\% \, Change = \frac{amount \; of \; change \; (new - old)}{old} \; x \; 100$$

The bag of chips says 18 oz, but you measure only 15.6 **oz. The FDA allows up to a 20% error for food products to be compliant with their labels. Is the chip bag within this limit?**

$$\%\ \text{error} = \frac{18 - 15.6}{15.6} \times 100$$

% error = 15%

within limits!

PERCENT Error is a measure of the difference between an estimated value and the actual value expressed as a percentage.

$$\%\ Error = \frac{difference\ (estimated - actual)}{actual}\ x\ 100$$

You inherit $10,000 when you were 6 years old. You decide to invest it and not touch it until you turn 18 years old.

How do you want to invest your money? How much would you have?

Option A: Loan to a Borrower with Simple Interest, 4.35%. t=12yrs

$I = Prt = (\$10{,}000)(0.0435)(12)$

$I = \$5{,}220$ ← just interest

$A = P + I = \$10{,}000 + \$5{,}220$ (P: Principal, I: interest)

$$A = \$15{,}220$$

simple interest

Leave it for 50 more years: 50 + 12

$A = \$10{,}000 + (\$10{,}000)(0.0435)(62)$

$$A = \$36{,}970$$

Interest is the ~~cost of borrowing money, and it can be~~ calculated in two ways. Simple Interest is only from the principal amount (deposited or borrowed).

Interest = Principal • Rate • Time	Final Amount = Principal + Interest
$I = Prt$	$A = P + Prt$

Option B: Put it in a Savings Account with Compounded Interest, 4.35%
t = 12 yrs

$$A = P(1+r)^t$$

$$A = (\$10{,}000)(1+0.0435)^{12}$$

$$\boxed{A = \$16{,}669}$$ compound interest

Leave it for 50 yrs more: ← 50 + 12

$$A = (\$10{,}000)(1.0435)^{62}$$

$$\boxed{A = \$140{,}130}$$ after 62 years

Compound Interest is the cost of borrowing money, but the interest earned is not only with the principal but also the interest earns interest!

Final Amount = Principal • (1 + Rate)^{Time}

$$A = P(1+r)^t$$