

2-28-18

Aim: SWBAT find simple interest using the formula  $I = PRT$ .

HW: Packet Page 25

Review Due Tomorrow

Test Friday

Do Now: Packet Page 22

Find the percent of increase or decrease in the following prices.

- 1) old: \$5      $6-5=1$   
new: \$6

$$\frac{1}{5} = \frac{r}{100}$$

$$\frac{5r}{5} = \frac{100}{5}$$

$$r = 20$$

- 2) \$22 marked up to \$33  
 $33-22=11$

$$\frac{11}{22} = \frac{r}{100}$$

$$\frac{22r}{22} = \frac{1100}{22}$$

$$r = 50$$

- 3) \$70 discounted to \$4

$$70-4=66$$

$$\frac{66}{70} = \frac{r}{100}$$

$$\frac{70r}{70} = \frac{6600}{70}$$

$$r = 94\frac{2}{7}$$

- 4) The planners of the school carnival estimate that they will sell 500 hotdogs. They only sell 400. What is the percent error in their estimate?

$$500-400=100$$

let  $r$  = the percent error

$$\frac{100}{400} = \frac{r}{100}$$

$$\frac{400r}{400} = \frac{10000}{400}$$

$$r = 25$$

They are wrong by 25%.

- 5) The number of students in the math club increased from 20 to 26. What was the percent of increase?

$$26-20=6$$

let  $r$  = the percent increase

$$\frac{6}{20} = \frac{r}{100}$$

$$\frac{20r}{20} = \frac{600}{20}$$

$$r = 30$$

The number of students in the math club increased by 30%.

- 6) Last year the value of Patty's bike was \$205. This year its value is \$164. What is the percent of decrease?

$$205-164=41$$

let  $r$  = the percent decrease

$$\frac{41}{205} = \frac{r}{100}$$

$$\frac{205r}{205} = \frac{4100}{205}$$

$$r = 20$$

Patty's bike's value decreased 20%.

- 7) An item that was selling for \$72 is reduced to \$60. Find the percent decrease, round to the nearest tenth.

$$72-60=12$$

let  $r$  = the percent decrease

$$\frac{12}{72} = \frac{r}{100}$$

$$\frac{72r}{72} = \frac{1200}{72}$$

$$r = 16.66\dots$$

The item's price decreased by about 16.7%.

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**AIM:** SWBAT find simple interest using the formula  $I = prt$ .

**DO NOW:**

Find the percent of change or percent error.

- 1) A football player gained 1,200 yards last season and 900 yards this season. Find the percent of change.

$$1200 - 900 = 300$$

$$\frac{300}{1200} = \frac{r}{100}$$

$$\frac{1200r}{1200} = \frac{30000}{1200}$$

$$r = 25$$

The football player gains decreased by 25%.

- 2) You estimate that a baby pig weighs 20 lbs. The actual weight of the baby pig is 16 lbs. Find the percent error.

$$20 - 16 = 4$$

$$\frac{4}{16} = \frac{r}{100}$$

$$\frac{16r}{16} = \frac{400}{16}$$

$$r = 25$$

The error was off by 25%.

**Notes:**

When money is borrowed, interest is charged for the use of that money over a period of time. When the money is paid back, the principal (amount of money that was borrowed) plus the interest is paid back. The amount of interest depends on the interest rate (%), the amount of money borrowed (principal) and the length of time that the money is borrowed. Simple interest is generally charged for borrowing money for short periods of time.

When money is put in a savings account interest is earned over a period of time. The amount of money in the account is the principal (amount of money you deposited) plus the interest. The amount of interest depends on the interest rate (%), the amount of money (principal) and the length of time that the money is in the account.

The formula for finding simple interest is: **Interest = Principal • Rate • Time.** ( $I = PRT$ )

$I$  = Interest, The (\$) amount of interest that is owed or earned.

$P$  = Principal, the amount of money that was borrow, saved or invested.

$R$  = Rate, the percent of interest. **\*Make sure to convert your % to a decimal before multiplying.\***

$T$  = Time, time is always in years.

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**Example #1:**

Jean has \$560 in her savings account. Her account earns 8% interest annually. How much interest will Jean earn after one year?

$$I = PRT$$

$$I = (560)(0.08)(1)$$

$$I = \$44.80$$

If she does not deposit or withdraw any money, how much will be in her account after one year?

There will be  $\$560 + \$44.80 = \$604.80$  in her account after one year.

**Example #2:**

Joe borrowed \$5000 for 6 months at a 10% interest rate, what would the interest be after 6 months?

$$\begin{aligned} I &= PRT \\ I &= (5000)(0.1)\left(\frac{1}{2}\right) \\ I &= \$250 \end{aligned}$$

How much money will Joe have to repay after six months?

$$\$5000 + \$250 = \$5250$$

**CLASSWORK:**

Find the interest AND total amount to the nearest cent.

1) 7.5% interest on \$500 for one year

$$\begin{aligned} I &= PRT \\ I &= (500)(0.075)(1) \\ I &= \$37.50 \end{aligned}$$

Total

$$\$500 + \$37.50 = \$537.50$$

2) 8% interest on \$750 for  $2\frac{1}{2}$  years

$$\begin{aligned} I &= PRT \\ I &= (750)(0.08)(2.5) \\ I &= \$150 \end{aligned}$$

Total

$$\$750 + \$150 = \$900$$

3) Lee has \$1050 in a savings account that earns 8.75% interest annually. How much does he have after 6 months? (Remember time MUST be in years.)

$$\begin{aligned} I &= PRT \\ I &= (1050)(0.0875)(0.5) \\ I &= \$45.9375 \end{aligned}$$

Lee has \$1095.94  
in his account after 6 months.

Total

$$\$1050 + \$45.9375 = \$1095.9375$$

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- 4) Carrie borrows \$800 from her aunt at 8% interest per year. If she pays her back after 8 months, how much does Carrie pay? (Remember time MUST be in years.)

$$I = PRT$$

$$I = (800)(0.08)(0.75)$$

$$I = \$48$$

$$\text{Total } \$800 + \$48 = \$848$$

- \* 5) Alice's savings account earned \$60 in 2 years. The interest rate is 2% per year. How much did Alice originally put into the savings account?

$$I = PRT$$

$$60 = P(0.02)(2)$$

$$\frac{60}{0.04} = \frac{P(0.04)}{0.04}$$

$$\$1500 = P$$

- 6) Andrew earns \$1,200 in interest after putting \$2,000 in the bank at a rate of 10%. How long did Andrew have his money in the bank?

$$I = PRT$$

$$1200 = (2000)(0.1)T$$

$$\frac{1200}{200} = \frac{200T}{200}$$

$$6 = T$$

Andrew's money was in the account for 6 years.

- 7) Barbara wants to borrow \$2,000. She can get a loan of \$2,000 at 7% simple interest for 3 years or at 11% simple interest for 2 years. Which loan will cost her more?

$$I = PRT$$

$$I = (2000)(0.07)(3)$$

$$I = \$420$$

$$I = PRT$$

$$I = (2000)(0.11)(2)$$

$$I = \$440$$

The 11% simple interest loan will cost Barbara more.

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## HOMEWORK - SIMPLE INTEREST

Find the interest AND total amount to the nearest cent.

- 1) 10% interest on \$1000 for 3 years      2) 12.25% interest on \$800 for  $1\frac{1}{2}$  years

- 3) Larry invests \$100 in a savings plan. The plan pays 4.5% interest each year. How much money will Larry earn in interest after 3 years?

- 4) Bill has \$5900 in his savings account. His account earns 8.5% interest annually. Will Bill have enough money for a new car in one year that costs \$6300?

- \*\*5) Tom borrowed \$6,836 from a bank at a rate of 12%. He owed the bank \$1,230.48 in interest at the end of the loan. How long did Tom take the loan out for?

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