

8.1 Simple Interest

A Ratios and Decimals

A ratio is a division of two numbers.

A ratio may be converted into a decimal and viceversa.

Example 1. Convert each ratio into a decimal.

a) $\frac{3}{2}$

b) $\frac{4}{3}$

c) $\frac{5}{4}$

d) $\frac{6}{3}$

Example 2. Convert each decimal into a ratio.

a) 0.2

b) 0.3

c) 0.12

d) 0.45

B Decimals and Percentage

A decimal may converted into a percentage.

Example 3. Convert each decimal into a percentage.

a) 0.04

b) 0.25

c) 0.17

d) 0.054

Example 4. Convert each ratio into a percentage.

a) $\frac{3}{2}$

b) $\frac{4}{5}$

c) $\frac{5}{4}$

d) $\frac{6}{4}$

Example 5. Convert each percentage into a ratio.

a) 4%

b) 23%

c) 1.7%

d) 54%

C Simple Interest

Simple interest I , is proportional to the principal (initial amount) P , the interest rate r , and period of time t .

$$I = Prt$$

Example 6. Find the simple interest accumulated over 5 years for an investment of \$10,000 at 5% interest rate per year.

Example 7. Find the simple interest accumulated over 4 months for an investment of \$1,200 at 2.5% interest rate per year.

Example 8. How many years are necessary for an investment of \$2000 at 2% interest per year to accumulate a simple interest of \$500?

D Amount

The amount or final or future value of an investment is the sum between the principal and the simple interest.

$$A = P + I$$

where:

P is the principal or the present value

A is the amount or the future value

I is the total accumulated interest

Example 9. Find the simple interest and the future value accumulated over 10 years for an investment of \$5,000 at 4% interest rate per year.

Note. The amount or future value of an investment may be also calculated by using the following formula:

$$A = P(1 + rt)$$

Where r is the interest rate per year.

Example 10. Find the future value accumulated over 8 years for an investment of \$15,000 at 1% interest rate per year.

Example 11. How much money should be invested now at 2.5% simple interest such that in 2 years the future value of this investment to be \$3000?

Example 12. After how many years, an initial investment of \$6000 at 4% interest rate per year will have a future value of \$8,000?

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