MATHEMATICS · GRADES 7-9

Simple interest

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you work out what a short loan costs or what a savings account earns, when the interest is charged only on the amount you started with. A borrower taking a short loan can work out the total cost before signing, because the interest never grows on itself. A saver with a simple interest account knows exactly what the deposit will earn each year. Knowing simple interest tells you how to work out the cost or the earnings when the interest stays tied to the original amount alone.



Rule

Simple interest: $I = P \times r \times t$.

The interest is charged only on the original amount, so it stays the same every year.

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Worked examples

EXAMPLE 1

Q You put $500 in a savings account that pays 4% simple interest a year. How much interest will you earn in 3 years?

SOLUTION

This is a simple interest question, so start with the one rule to remember: interest = principal x rate x time.

The principal is $500, the rate is 0.04, and the time is 3 years. So the interest is 500 x 0.04 x 3. Five hundred times 0.04 is 20, and 20 times 3 is 60.

So the interest is $60.

EXAMPLE 2

Q The simple interest on $3,600 over 10 years is $2,520. Find the annual rate.

SOLUTION

This is a find-the-rate question, so work the same rule backwards. The interest is the principal times the rate times the time, so the rate is the interest divided by the principal times the time.

The principal times the time is 3,600 x 10, which is 36,000. So the rate is 2,520 divided by 36,000, which is 0.07.

So the annual rate is 7%.

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Practice questions

1. Find the simple interest on $100 at 10% a year for 1 year.

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2. A loan of $400 at 5% simple interest a year gives $40 of interest in 2 years. How much interest is charged each year?

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3. You borrow $300 at 6% simple interest a year for 3 years. If the rate doubles to 12%, what is the interest?

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4 You borrow $1,000 at 3% simple interest a year for 4 years. How much must you pay back in total?

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5 The simple interest is $90 at 5% a year for 1 year. What was the principal?

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6 A loan of $400 at 14% simple interest gives $112 of interest. For how many years was the money borrowed?

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7 You invest $250. After 4 years it has grown to $330. What was the annual simple interest rate?

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8 Find the simple interest on $1,200 at 6% a year for 6 months.

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9 A car loses 9% of its $10,000 value each year. What is its value after 2 years?

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10 **Which loan costs less: $500 at 7% simple interest for 2 years, or $500 at 5% simple interest for 3 years?**

A The 7% loan for 2 years

B The 5% loan for 3 years

C The 7% loan for 3 years

D Both loans cost the same

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ANSWER KEY

1. $10

2. $20

3. $108

4. $1,120

5. $1,800

6. 2 years

7. 8%

8. $36

9. $8,200

10. The 7% loan for 2 years

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