

Simple Interest - Worksheet

Skills Questions

Group A - Percentage increase and decrease

Increase or decrease the following amounts by the given percentage:

- | | | |
|------------------------|------------------------|-------------------------|
| 1) Increase 100 by 2% | 2) Increase 50 by 10% | 3) Decrease 20 by 25% |
| 4) Increase 72 by 10% | 5) Decrease 5 by 20% | 6) Increase 24 by 60% |
| 7) Increase 60 by 3% | 8) Decrease 22 by 70% | 9) Increase 126 by 41% |
| 10) Increase 52 by 17% | 11) Increase 3.6 by 2% | 12) Decrease 8 by 17.5% |

Group B - Simple interest

Calculate simple interest or the final value of the investment on the given amount.

Remember: $I = Prt$ and $A = P(1 + rt)$

- | | |
|---|--|
| 1) Find the interest earned on £100 invested with a simple interest rate of 20%, for 3 years. | 2) Find the interest earned on £200 invested with a simple interest rate of 5% per year for 2 years. |
| 3) Find the interest earned on £500 invested with a simple interest rate of 12% per year for 5 years. | 4) Find the final value of £200 invested with a 4% per year simple interest, for 6 years. |
| 5) Find the final value of £500 invested with an 8% per year simple interest, for 8 years. | 6) Find the final value of £110 invested with a 2.5% per year simple interest, for 3 years. |
| 7) Find the value of £100 which decreases by 30% per year simple interest, for 2 years. | 8) Find the value of £1,000 which decreases by 5% per year simple interest, for 12 years. |
| 9) Find the value of £220 which decreases by 15% per year simple interest, for 5 years. | 10) Find the values of £450 which decreases by 33% per year simple interest, for 3 years. |
| 11) Find the value of £24 which decreases by 0.5% per year simple interest, for 3 years. | 12) Find the values of £13.80 which decreases by 17.5% per year simple interest, for 4.5 years. |

Simple Interest - Worksheet

Group C - Changing percentages

Find the new value given the criteria for each question. Each interest rate is a simple interest on the amount given. For each question, can you predict whether the solution will be greater or smaller than the original amount?

1) £100 increases by 3% for 2 years then increases by 2% for 3 years.

2) £250 increases by 5% for 2 years then increases by 3% for 8 years.

3) £600 gains 3.5% interest for 10 years then loses 1% for 4 years.

4) £550 increases by 2.1% per year for 2 years then loses 4% per year for 3 years.

5) £16 increases by 2.5% for 3 years then decreases by 2.7% for 2.5 years.

6) £4.50 increases by 12% per month for 3 months, then decreases by 9% per month for 4 months.

7) £0.76 increases by 2% per year for 4 years, then loses 1.5% per year for 3 years.

8) £42.70 increases by 2.4% per year for 2 years then loses 0.2% per month for 2 years.

9) £3,579 increases by 1% per day for 3 weeks, then decreases by 2% every other day for 2 weeks.

10) £56,000 increases by 0.3% per annum for 15 years, then decreases by 0.1% per month for 12 months.

11) £7.50 decreases by 10% per hour for 6.5 hours, then decreases by 5% per hour for 3.25 hours.

12) £5 million decreases by 0.01% per minute for half an hour then decreases by 0.2% per minute for 1.5 hours.

Simple Interest - Worksheet

Applied

- 1) (a)** Stephen invests £300 in a bank account with a simple interest rate of 3% per year. Calculate the amount of interest he will earn after 5 years.

(b) How many years will it take Stephen to have £400 in the account?
- 2) (a)** Joe purchases a car on a finance deal for £67, 000. The dealership charges 1% of the original amount, simple interest, every year until the car is paid for. If he pays £1, 000 per month, how much money will Joe pay for the car, in total?

(b) Joe decides to pay £1, 500 per month. How much does this alter the total cost of the car on the same finance deal?
- 3) (a)** Sarah buys a house for £150, 000. House prices in the area increase by 1. 2% per year simple interest. How much is the house worth after 4 years?

(b) After these 4 years, the house prices decrease by 0. 3% simple interest. What is the value of the house after another 2 years?
- 4) (a)** In one year, the value of a painting reached £27, 500. The value of the painting then reduced by 6% per year for 3 years, simple interest. What is the final value of the painting after 3 years?

(b) The value of another painting was £24, 000. What was the value of the painting 3 years previously if it had the same depreciation simple interest rate?

Simple Interest - Exam Questions

- 1) (a) Isla would like to save £2,500. She has two account options:

Account A: 0.5% simple interest every 2 months

Account B: 5% simple interest per year.

Which account will give her the best return on her savings?

Give a reason for your answer.

.....
(2)

- (b) Using your answer to part (a), how much money would Isla have in the account after 5 years with no withdrawals?

.....
(2)
(4 marks)

Simple Interest - Exam Questions

- 2) (a) The value of shares in a stock market reduces by 9.5% every 30 seconds, simple interest. Initially the shares are worth £400. Calculate the value of the shares after 1 minute.

.....
(3)

- (b) Calculate the time needed to increase the value back to £400 with a simple interest rate of 3% every minute.

.....
(3)
(6 marks)

-
- 3) Tom invests £3,000 in a savings account which has a simple interest rate of 2.5% per year.

Jane invests £5,000 in a different savings account which has a simple interest rate of 1.2% per year.

Find the difference in their investments after 5 years.

.....
(5 marks)

Simple Interest - Exam Questions

- 4) (a) Find the simple interest rate which increases an investment of £4,000 to £4,576 over a period of 9 years.

.....
(3)

- (b) An investment is worth £8,000 after 15 years in a simple interest savings account. If the interest rate was 4%, find the value of the initial investment.

.....
(3)
(6 marks)

Simple Interest - Answers

	Question	Answer
	Skill Questions	
Group A	<p>Increase the following amounts by the given percentage:</p> <p>1) Increase 100 by 2%</p> <p>2) Increase 50 by 10%</p> <p>3) Decrease 20 by 25%</p> <p>4) Increase 72 by 10%</p> <p>5) Decrease 5 by 20%</p> <p>6) Increase 24 by 60%</p> <p>7) Increase 60 by 3%</p> <p>8) Decrease 22 by 70%</p> <p>9) Increase 126 by 41%</p> <p>10) Increase 52 by 17%</p> <p>11) Increase 3.6 by 2%</p> <p>12) Decrease 8 by 17.5%</p>	<p>1) 102</p> <p>2) 55</p> <p>3) 15</p> <p>4) 79.2</p> <p>5) 4</p> <p>6) 38.4</p> <p>7) 61.8</p> <p>8) 6.6</p> <p>9) 177.66</p> <p>10) 60.84</p> <p>11) 3.672</p> <p>12) 6.6</p>
Group B	<p>Calculate simple interest or the final value of the investment on the given amount.</p> <p>Remember: $I = Prt$ and $A = P(1 + rt)$</p> <p>1) Find the interest earned on £100 invested with a simple interest rate of 20%, for 3 years.</p> <p>2) Find the interest earned on £200 invested with a simple interest rate of by 5% per year simple interest, for 2 years.</p> <p>3) Find the interest earned on £500 invested with a simple interest rate of by 12% per year simple interest, for 5 years.</p> <p>4) Find the final value of £200 invested with a 4% per year simple interest, for 6 years</p>	<p>1) £60</p> <p>2) £20</p> <p>3) £300</p> <p>4) £248</p>

Simple Interest - Answers

Group B contd	<p>5) Find the final value of £500 invested with an 8% per year simple interest, for 8 years.</p> <p>6) Find the final value of £110 invested with a 2.5% per year simple interest, for 3 years.</p> <p>7) Find the value of £100 which decreases by 30% per year simple interest, for 2 years.</p> <p>8) Find the value of £1000 which decreases by 5% per year simple interest, for 12 years.</p> <p>9) Find the value of £220 which decreases by 15% per year simple interest, for 5 years.</p> <p>10) Find the values of £450 which decreases by 33% per year simple interest, for 3 years.</p> <p>11) Find the value of £24 which decreases by 0.5% per year simple interest, for 3 years.</p> <p>12) Find the values of £13.80 which decreases by 17.5% per year simple interest, for 4.5 years.</p>	<p>5) £820</p> <p>6) £118.25</p> <p>7) £40</p> <p>8) £400</p> <p>9) £55</p> <p>10) £4.50</p> <p>11) £23.64</p> <p>12) £2.9325</p>
Group C	<p>Find the new value given the criteria for each question. Each interest rate is a simple interest on the amount given. For each question, can you predict whether the solution will be greater or smaller than the original amount?</p> <p>1) £100 increases by 3% for 2 years then increases by 2% for 3 years.</p> <p>2) £250 increases by 5% for 2 years then increases by 3% for 8 years.</p> <p>3) £600 gains 3.5% interest for 10 years then loses 1% for 4 years.</p> <p>4) £550 increases by 2.1% per year for 2 years then loses 4% per year for 3 years.</p>	<p>1) £112.36</p> <p>2) £341</p> <p>3) £777.60</p> <p>4) £504.33</p>

Simple Interest - Answers

Group C contd	5) £16 increases by 2.5% for 3 years then decreases by 2.7% for 2.5 years.	5) £16.04
	6) £4.50 increases by 12% per month for 3 months, then decreases by 9% per month for 4 months.	6) £3.92
	7) £0.76 increases by 2% per year for 4 years, then loses 1.5% per year for 3 years.	7) £0.78
	8) £42.70 increases by 2.4% per year for 2 years then loses 0.2% per month for 2 years.	8) £42.60
	9) £3579 increases by 1% per day for 3 weeks, then decreases by 2% every other day for 2 weeks.	9) £3,724.31
	10) £56,000 increases by 0.3% per annum for 15 years, then decreases by 0.1% per month for 12 months.	10) £57817.76
	11) £7.50 decreases by 10% per hour for 6.5 hours, then decreases by 5% per hour for 3.25 hours.	11) £2.20
	12) £5 million decreases by 0.01% per minute for half an hour then decreases by 0.2% per minute for 1.5 hours.	12) £4,087,700

Simple Interest - Answers

	Question	Answer
	Applied Questions	
1)	<p>a) Stephen invests £300 in a bank account with a simple interest rate of 3% per year. Calculate the amount of interest he will earn after 5 years</p> <p>b) How many years will it take Stephen to have £400 in the account?</p>	<p>a) $300 \times 0.03 \times 5$ = £45</p> <p>b) $100 \div (45 \div 5) = 11.\dot{1} = 12 \text{ yrs}$</p>
2)	<p>a) Joe purchases a car on a finance deal for £67,000. The dealership charges 1% of the original amount, simple interest, every year until the car is paid for. If he pays £1,000 per month, how much money will Joe pay for the car, in total?</p> <p>b) Joe decides to pay £1,500 per month. How much does this alter the total cost of the car on the same finance deal?</p>	<p>a) $1000 \times 12 - 670 = £11330$ paid off per year $67000 \div 11330 = 5.9135\dots$ years 5 years of interest added $670 \times 5 = £3350$ $67000 + 3350 = £70350$</p> <p>b) $1500 \times 12 - 670 = £17330$ paid off per year $67000 \div 17330 = 3.866\dots$ years 3 years of interest added $5 - 3 = 2$ years difference in interest payments saving $670 \times 2 = £1340$</p>
3)	<p>a) Sarah buys a house for £150,000. House prices in the area increase by 1.2% per year simple interest. How much is the house worth after 4 years?</p>	<p>a) $150,000 \times (1 + 0.012 \times 4)$ = £157,200</p>
	<p>b) After these 4 years, the house prices decrease by 0.3% simple interest. What is the value of the house after another 2 years?</p>	<p>b) $157,200 \times (1 - 0.003 \times 2)$ = £156,256.80</p>

Simple Interest - Answers

4)	<p>a) In one year, the value of a painting reached £27,500. The value of the painting then reduced by 6% per year for 3 years, simple interest. What is the final value of the painting after 3 years?</p> <p>b) The value of another painting was £24,000. What was the value of the painting 3 years previously if it had the same depreciation simple interest rate?</p>	<p>a) $27,500 \times (1 - 0.06 \times 3)$ $= 22,550$</p> <p>b) $24,000 \div (1 - 0.03 \times 6)$ $= £29,268$</p>
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Simple Interest - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	<p>Isla would like to save £2, 500. Which account will give her the best return on her savings? Give a reason for your answer.</p> <p>Account A: 0. 5% simple interest every 2 months</p> <p>Account B: 5% simple interest per year.</p>	<p>$0.5 \times 6 = 3\%$ per year</p> <p>Account B</p>	<p>(1)</p> <p>(1)</p>
(b)	Using your answer to part (a), how much money would Isla have in the account after 5 years with no withdrawals?	<p>$2500 \times (0.05 \times 5)$ <u>or</u></p> <p>2500×0.25</p> <p>$= £3,125$</p>	<p>(1)</p> <p>(1)</p>
2) (a)	The value of shares in a stock market reduces by 9. 5% every 30 seconds, simple interest. Initially the shares are worth £400. Calculate the value of the shares after 1 minute.	<p>19% reduction</p> <p>40×0.81</p> <p>$= £324$</p>	<p>(1)</p> <p>(1)</p> <p>(1)</p>
(b)	Calculate the time needed to increase the value back to £400 with a simple interest rate of 3% every minute.	<p>£76 required</p> <p>$75 \div (324 \times 0.03)$</p> <p>7. 82 minutes</p>	<p>(1)</p> <p>(1)</p> <p>(1)</p>
3)	<p>Tom invests £3, 000 in a savings account which has a simple interest rate of 2. 5% per year.</p> <p>Jane invests £5, 000 in a different savings account which has a simple interest rate of 1. 2% per year.</p> <p>Find the difference in their investments after 5 years.</p>	<p>$3,000 \times (1 + 0.025 \times 5)$</p> <p>$= £3,375$</p> <p>$5,000 \times (1 + 0.012 \times 5)$</p> <p>$= £5,300$</p> <p>Difference = £1, 925</p>	<p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p>

Simple Interest - Mark Scheme

4) (a)	Find the simple interest rate which increases an investment of £4, 000 to £4, 576 over a period of 9 years.	$576 \div 9 = 64$	(1)
		$\frac{64}{4000} \times 100$	(1)
		$= 1.6\%$	(1)
(b)	An investment is worth £8, 000 after 15 years in a simple interest savings account. If the interest rate was 4%, find the value of the initial investment.	$0.04 \times 15 = 0.6$	(1)
		$8,000 \div 1.6$	(1)
		$= £5,000$	(1)

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