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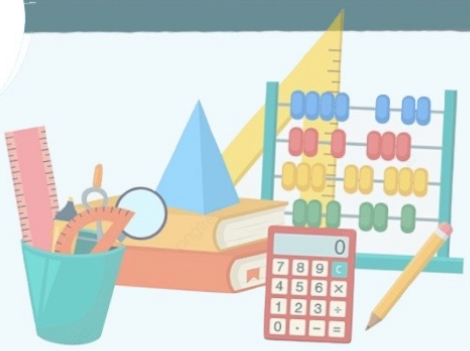
20% OFF!

BEFORE: $17

NOW: $14

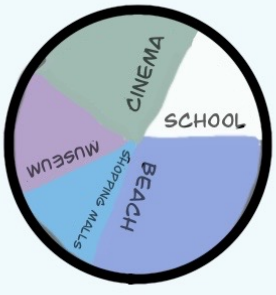


10%

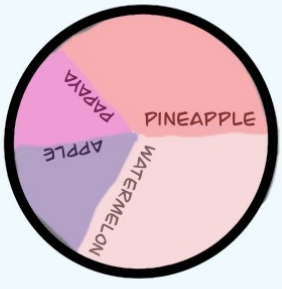
PERCENTAGE %

100%

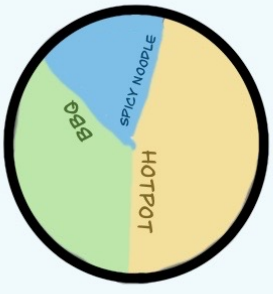
MY FAVORITE PLACES



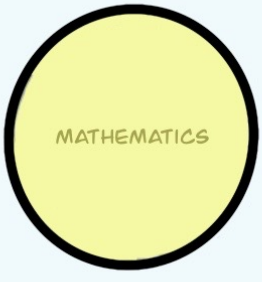
MY FAVORITE FRUITS



MY FAVORITE FOOD



MY FAVORITE SUBJECT



Question 1

Write 55 g as a percentage of 2.2 kg. [2]

$$\frac{55\text{g}}{2200\text{g}} \times 100 = \frac{1}{40} \times 100 = 2.5\%$$

Question 2

Work out 85 cents as a percentage of $2.03 . [1]

$$\frac{85}{203} \times 100 = 41.87\%$$

Question 3

From a sample of 80 batteries, 3 are faulty.

Work out the percentage of faulty batteries.

[1]

$$\frac{3}{80} \times 100 = 3.75\%$$

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Question 4

Jasjeet and her brother collect stamps.
When Jasjeet gives her brother 1% of her stamps, she has 2475 stamps left.

Calculate how many stamps Jasjeet had originally. [3]

$99\% = 2475$

$1\% = \frac{2475}{99}$

$100\% = \frac{2475}{99} \times 100 = 2500$

Question 5

In a sale, the cost of a coat is reduced from \$85 to \$67.50 . [3]

Calculate the percentage reduction in the cost of the coat.

$100 - \frac{67.5 \times 100}{85} = 20.59\%$

$\%$ decrease $= \frac{17.5}{85} \times 100 = 20.59\%$

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Question 6

The population of Dubai at the end of 2012 was 2.1 million.
This was predicted to increase at a rate of 6% each year.

Calculate the predicted population of Dubai at the end of 2015. [3]

$$2.1\left(1+\frac{6}{100}\right)^3 = 2.5 \text{ million}$$

Question 7

Anita buys a computer for $391 in a sale.
The sale price is 15% less than the original price.

Calculate the original price of the computer. [3]

$$x - x \times \frac{15}{100} = 391$$

$$x = \$460$$

(or)

$$85\% = 391$$

$$100\% = \frac{391}{85} \times 100 = 460$$

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Question 8

Calculate 17.5% of 44kg. [2]

$$44 \times \frac{17.5}{100} = 7.7\text{kg}$$

Question 9

Emily invests $\$x$ at a rate of 3% per year simple interest.
After 5 years she has \$20.10 interest. [3]

Find the value of x.

$$I = \frac{Prt}{100}$$

$$20.10 = \frac{x \times 3 \times 5}{100}$$

$$x = 134$$

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Question 10

In 2012 the cost of a ticket to an arts festival was $30.

This was 20% more than the ticket cost in 2011. [3]

Calculate the cost of the ticket in 2011.

$$x\left(1+\frac{20}{100}\right)=30$$

120% = $30 (or) x = $25

100% = $25

Question 11

The Tiger Sky Tower in Singapore has a viewing capsule which holds 72 people.
This number is 75% of the population of Singapore when it was founded in 1819.
What was the population of Singapore in 1819? [2]

$$x \times \frac{75}{100} = 72$$

$$x = 96$$

(or)

75% = 72 people

100% = 96 people

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Question 12

Samantha invests $600 at a rate of 2% per year simple interest.

Calculate the interest Samantha earns in 8 years. [2]

$$I = \frac{Prt}{100}$$
$$= \frac{600 \times 2 \times 8}{100}$$
$$= 96\$$$

Question 13

Maria pays $84 rent.
The rent is increased by 5%.

Calculate Maria's new rent. [2]

$$84\left(1 + \frac{5}{100}\right) = 88.2$$

(or)

$$84 \times 105\% = 88.2$$

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Question 1

Shania invests \$750 at a rate of $2\frac{1}{2}\%$ per year simple interest.

Calculate the **total** amount Shania has after 5 years. [3]

$$I = \frac{Prt}{100}$$

$$= \frac{750 \times 2.5 \times 5}{100} = 93.75$$

total amount = 843.75 \$

Question 2

The taxi fare in a city is \$3 **and** then \$0.40 for every kilometre travelled.

(a) A taxi fare is \$9. [2]

How far has the taxi travelled?

$$\frac{9-3}{0.4} = \frac{60}{4} = 15 \text{ km}$$

(b) Taxi fares cost 30 % more at night.

How much does a \$9 daytime journey cost at night? [2]

$$9 \times 1.3 = \$11.7$$

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Question 3

Hans invests $750 for 8 years at a rate of 2% per year simple interest. [2]

Calculate the interest Hans receives.

$$I = \frac{Prt}{100}$$
$$= \frac{750 \times 2 \times 8}{100}$$
$$= 120\$$$

Question 4

Maria decides to increase her homework time of 8 hours per week by 15%. [3]

Calculate her new homework time.
Give your answer in hours and minutes.

$$8 + \frac{8 \times 15}{100} = 9.2 \text{ hr}$$

9 hours and 12 minutes

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Question 5

During a marathon race an athlete loses 2 % of his mass.
At the end of the race his mass is 67.13 kg.

Calculate his mass before the race. [3]

$$x - \frac{x \times 2}{100} = 67.13$$

(or) $x = 68.5\ kg$

98% = 67.13 kg

100% = 68.5 kg

Question 6

A concert hall has 1540 seats.

Calculate the number of people in the hall when 55% of the seats are occupied. [1]

$1540 \times 0.55 = 847$

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Question 7

In 1970 the population of China was 8.2×10^8.
In 2007 the population of China was 1.322×10^9.
Calculate the population in 2007 as a percentage of the population in 1970. [2]

$$\frac{1.322 \times 10^9}{8.2 \times 10^8} \times 100$$

$$= 1.612 \times 100 = 161.2\%$$

Question 8

In 2004 Colin had a salary of \$7200.

(a) This was an increase of 20% on his salary in 2002.
Calculate his salary in 2002. [2]

120% = \$7200

100% = \$6000

(b) In 2006 his salary increased to \$8100.
Calculate the percentage increase from 2004 to 2006. [2]

$$\frac{900}{7200} \times 100$$

$$= 12.5\%$$

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Question 9

Celine invests $800 for 5 months at 3% simple interest per year. [2]
Calculate the interest she receives.

$$I = \frac{Prt}{100} = \frac{800 \times 3 \times 5/12}{100}$$

$$= \$10$$

Question 10

Sara has $3000 to invest for 2 years.
She invests the money in a bank which pays simple interest at the rate of 7.5 % per year. [2]
Calculate how much interest she will have at the end of the 2 years.

$$I = \frac{Prt}{100} = \frac{3000 \times 7.5 \times 2}{100}$$

$$= 450$$

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Question 11

In 1950, the population of Switzerland was 4 714 900. In 2000, the population was 7 087 000.

(a) Work out the percentage increase in the population from 1950 to 2000. [2]

$\frac{7087000 - 4714900}{4714900} \times 100 = 50.3\%$

(b) (i) Write the 1950 population correct to 3 significant figures. [1]

4710000

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(ii) Write the 2000 population in standard form. [1]

7.087×10^6

Question 12

Nyali paid \$62 for a bicycle. She sold it later for \$46.
What was her percentage loss? [2]

$100 - \left(\frac{46}{62} \times 100\right) = 25.81\%$

(or)

$\%\ \text{loss} = \frac{16}{62} \times 100$

$= 25.8\%$

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Question 1

Indira buys a television in a sale for $924.
This was a reduction of 12% on the original price. [3]

Calculate the original price of the television.

$$x - \left(x \times \frac{12}{100}\right) = 924$$

$$x = \$1050$$

(or)

88% = $924

100% = $1050

Question 2

Ahmed paid $34 000 for a car.
His car decreased in value by 40% at the end of the first year.
The value at the end of the second year was 10% less than the value at the end of the first year.

Calculate the value of Ahmed's car after 2 years.

[2]

After first yr,

$$34000 - \left(34000 \times \frac{40}{100}\right) = 20400$$

After second yr,

$$20400 - \left(20400 \times \frac{10}{100}\right) = 18360$$

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Question 3

Hazel invests $1800 for 7 years at a rate of 1.5% per year compound interest.

Calculate how much interest she will receive after the 7 years.
Give your answer correct to the nearest dollar. [4]

$$1800\left(1+\frac{1.5}{100}\right)^{7}-1800$$

$$=\$197.72$$

$$=\$198 \quad \text{(nearest dollar)}$$

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Question 4

Robert buys a car for $8000.
At the end of each year the value of the car has decreased by 10% of its value at the beginning of that year.

Calculate the value of the car at the end of 7 years.

[2]

$$8000\left(1-\frac{10}{100}\right)^7 = \$3826.38$$

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Question 5

Georg invests $5000 for 14 years at a rate of 2% per year compound interest.

Calculate the interest he receives.
Give your answer correct to the nearest dollar.

[4]

$$5000\left(1+\frac{2}{100}\right)^{14} - 5000$$

$$= \$1597.39$$

$$= \$1597 \text{ (nearest dollar)}$$

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Question 6

Amalie makes a profit of 20% when she sells a shirt for $21.60.

Calculate how much Amalie paid for the shirt. [2]

$x + x \times \frac{20}{100} = 21.60$

(or)

$x = 18$

120 % = 21.60

100 % = $18

Question 7

A student played a computer game 500 times and won 370 of these games.
He then won the next x games and lost none.
He has now won 75% of the games he has played.
Find the value of x. [4]

Lost = 500 − 370 = 130

% Lost = 100 − 75 = 25 %

25 % — 130

75 % — 390

$x = 390 - 370 = 20$

(or)

total game = $500 + x$

$0.75 \times (500 + x) = 370 + x$

$375 + 0.75x = 370 + x$

$5 = 0.25x$

$20 = x$

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Question 8

A house was built in 1985 and cost $62 000.
It was sold in 2003 for $310000.

(a) Work out the 1985 price as a percentage of the 2003 price. [2]

$\frac{62000}{310000} \times 100$

$310000 \times \frac{x}{1000} = 62000$

$x = 20$ %

$= 20\ \%$

(b) Calculate the percentage increase in the price from 1985 to 2003. [2]

% increase $= \frac{\text{increased amount}}{\text{original}} \times 100$

$\frac{310000 - 62000}{62000} \times 100$

$= \frac{248000}{62000} \times 100 = 4\%$

Question 9

In 1997 the population of China was 1.24×10^9.
In 2002 the population of China was 1.28×10^9.
Calculate the percentage increase from 1997 to 2002. [2]

$\frac{1.28 \times 10^9 - 1.24 \times 10^9}{1.24 \times 10^9} \times 100$

$= \frac{0.04 \times 10^9}{1.24 \times 10^9} \times 100 = \frac{400}{124} = 3.23\%$

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Question 10

Abdul invested \$240 when the rate of simple interest was r% per year.
After m **months** the interest was \$$I$.
Write down and simplify an expression for I, in terms of m and r. [2]

$$I = \frac{Prt}{100}$$

$$= \frac{240 \times r \times m/12}{100}$$

$$= \frac{rm}{5}$$

Question 11

A baby was born with a mass of 3.6 kg.
After three months this mass had increased to 6 kg.
Calculate the percentage increase in the mass of the baby. [2]

$$3.6 \times \frac{x}{100} = 6 - 3.6$$

$$x = 66.67 \ldots$$

(or)

$$\% \text{ increase} = \frac{6 - 3.6}{3.6} \times 100$$

$$= 66.\dot{6}\%$$

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