MATHEMATICS · GRADES 7-9

Percent increase and decrease

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you work out how much a price has gone up at the store, how much a sale saves you, or how much your phone battery has dropped. A shopper checks whether a sale price is really a bargain, and a worker checks whether a pay raise keeps up with rising prices. A phone battery dropping from 80 percent to 40 percent tells you at a glance how much charge is gone. Percentages turn a raw change into a number you can compare fairly, no matter how big or small the starting amount was (see Percentage change).



Rule

$$\text{Percent change} = \frac{\text{change}}{\text{starting value}} \times 100.$$

Find the change first, then divide by the value you started from, never the new value.

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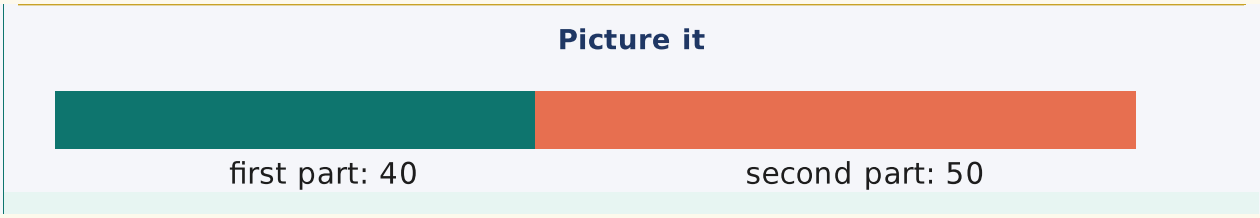
Worked examples

EXAMPLE 1

Q A price rises from $40 to $50. Find the percent increase.



SOLUTION

Picture it

first part: 40 second part: 50

Find the change: 50 − 40 = 10

Divide the change by the starting value: 10 ÷ 40 = 0.25

Convert to a percent: 0.25 = 25 percent increase

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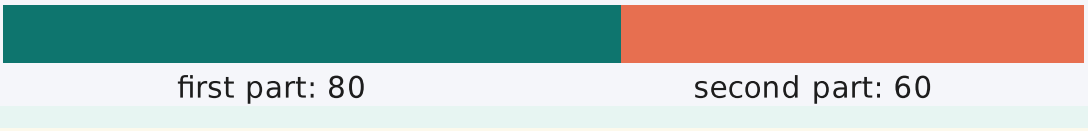
EXAMPLE 2

Q A price falls from $80 to $60. Find the percent decrease.

Picture it



SOLUTION

Picture it

first part: 80 second part: 60

Find the change: 80 – 60 = 20

Divide the change by the starting value: 20 ÷ 80 = 0.25

Convert to a percent: 0.25 = 25 percent decrease

Practice questions

1 A price rises from $50 to $60. Find the percent increase

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2 A price falls from $200 to $150. Find the percent decrease

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3 A bus route carries 40 passengers a day. After a new stop opens, it carries 48 passengers a day. Find the percent increase.

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4 A school has 1000 students. After some families move away, 900 students remain. By what percent did the number of students fall?

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5 A cinema ticket rises from $25 to $30. By what percent did the price rise?

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6 A jacket is marked down from $60 to $48. Find the percent decrease.

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7 A seedling grows from 20 cm tall to 25 cm tall. Find the percent increase.

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8 A wrestler drops from 80 kg to 72 kg. Find the percent decrease.

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9 Rent rises from $120 a week to $150 a week. Find the percent increase.

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10 A bike is on sale, down from $90 to $63. Find the percent decrease.

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ANSWER KEY

1. 20

2. 25

3. 20

4. 10

5. 20

6. 20

7. 25

8. 10

9. 25

10. 30

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