

# Reverse Percentages

GCSE Maths · Written to the shared content for AQA, Edexcel and OCR

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## 1. Worked example

**A TV costs £340 after a 15% reduction. Find the original price.**

Step 1 · £340 is what percentage of the original?

$$100\% - 15\% = 85\%$$

Step 2 · Divide by the multiplier

$$340 \div 0.85 = 400$$

**Answer: £400**

Check:  $£400 \times 0.85 = £340$  ✓

## 2. Now try one with the steps

**A price rises from £45 to £54. Find the percentage increase.**

Step 1 · Change

Step 2 · Divide by the ORIGINAL

**Answer:**

## 3. Practice

Show your working. The marks tell you how much is expected.

1. Increase £80 by 15%. [2]

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2. Decrease £250 by 12%. [2]

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3. Find the percentage change from 40 to 50. [2]

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4. Find the percentage change from 80 to 68. [2]

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5. A jacket costs £48 after a 20% discount. What was the original price? [2]
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6. After a 5% pay rise, Priya earns £27 300. What did she earn before? [2]
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7. A price including 20% VAT is £150. What is the price before VAT? [2]
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8. A population fell by 12% to 8800. What was it before? [2]
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9. After a 35% increase a value is 54. What was the original value? [2]
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10. A shop sells a lamp for £36, making a 20% profit on what it paid. How much did the shop pay? [2]
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11. A bill is £96 including 20% VAT. How much VAT is included? [2]
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12. A bike bought for £250 is sold for £215. Find the percentage loss. [2]
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13. A train fare rises from £18.50 to £20.35. Find the percentage increase. [2]
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14. A price is reduced by 25% and then by 20%. It is now £54. What was the original price? [3]
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15. A £80 item is reduced by 25% to £60. Explain why adding 25% to £60 does not give back £80. [2]
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## 4. Before you hand it in

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**£48 after 20% off →  $48 \times 1.2 = £57.60$**

The 20% was of the ORIGINAL. £48 is 80% of it:  $48 \div 0.8 = £60$ .

**VAT on a £84 bill = 20% of £84 = £16.80**

Find the pre-VAT price first:  $84 \div 1.2 = £70$ , so VAT = £14.

**45 → 54 is a  $9 \div 54 = 16.7\%$  increase**

Percentage change is always compared with the ORIGINAL:  $9 \div 45 = 20\%$ .

**30% off then 10% off = 40% off**

Multiply the multipliers:  $0.7 \times 0.9 = 0.63$ , a 37% reduction.