

Percentage Change

Section A

1. If I have 124% of the original I have *Increased* it by _____%.
2. If I have 85% of the original I have *Decreased* it by _____%.
3. If I have _____% of the original I have *Increased* it by 32%.
4. If I have 74% of the original I have _____ it by _____%.
5. If I have _____% of the original I have *Increased* it by 12%.
6. If I have 184% of the original I have _____ it by _____%.
7. Multiply an amount by 1.24 and I will _____ it by _____%.
8. Multiply an amount by 1.30 and I will _____ it by _____%.
9. Multiply an amount by 1.03 and I will _____ it by _____%.
10. Multiply an amount by 0.78 and I will _____ it by _____%.
11. Multiply an amount by 0.55 and I will _____ it by _____%.
12. Multiply an amount by 1.025 and I will _____ it by _____%.
13. Multiply an amount by 1.007 and I will _____ it by _____%.
14. Multiply an amount by 1.175 and I will _____ it by _____%.
15. Multiply an amount by 0.985 and I will _____ it by _____%.

Section B

1. Increase 192 by 34%.
2. Increase 412 by 82%.
3. Increase 271 by 7%.
4. Decrease 509 by 16%.
5. Decrease 38 by 94%.
6. Decrease 723 by 4%.
7. Increase 55 by 12%, then increase the result by 7%.
Increase 55 by 19%. Comment on your answers.
8. Increase 70 by 15%, then decrease the result by 15%
Comment on your answer.
9. Increase 410 by 15.7%.
10. Increase 720 by 2.3%.
11. Decrease 349 by 14.2%.
12. Decrease 392 by 0.5%.

13. Hubert gets £10 per week pocket money. After some exceptional grades, his parents increase this by 40%. He then does lots of washing up, earning a further 10% increase. How much does he now get per week?
14. Humphrey gets £12 per week pocket money. After some poor grades, his parents decrease this by 30%. He then forgets to do the washing up, and so receives a further 20% decrease. How much does he now get per week?

Answer box:

68.425	111.89	15.40	65.45	427.56	390.04
299.442	-	257.28	694.08	736.56	2.28
749.84	65.912	6.72	289.97	474.37	-

Section C

15. Find 34% of 192.
16. Increase 420 by 82%.
17. Decrease 509 by 16%.
18. Find 104% of 723.
19. Increase 271 by 7%.
20. Decrease 38 by 94%.
21. 42 pupils in a year group of 50 pupils study Latin. What percentage of students study Latin?
22. 28 of my 40 second cousins are female. What percentage of my second cousins are male?
23. There is a young apple tree in my garden. In January 2007 it was 150cm tall. In January 2008 it was 180cm tall. In January 2009 it was 198cm tall.
- By what percentage did the height increase in the year 2007?
 - By what percentage did the height increase in the year 2008?
 - Increase 150cm by 30%.
 - Explain why your answer to part (c) differs from the height in 2009.
24. A company starts with a value of £2000. In its first year, the value of the company increases by 20% and in the second year the value of the company decreases by 20%.
- What is the value of the company at the end of the 2 years?
 - What percentage decrease does this represent over the 2 years?
 - What is the overall percentage change if the value instead increases by 40% and then decreases by 40%?
 - Predict** the percentage change at the end of the 2 years if the value increases and then decreases by 30%. **Check** your answer.
 - What happens if the decrease happens before the increase?
 - Is there any way that you can end up with more than you started with in a case like this? Why / Why not?
25. Over Christmas my family all put on weight, increasing our total weight by 20%. In the New Year we all went skiing and the exercise meant we lost weight – our total weight decreased by 10%. By what percentage did our weight change overall?
26. Two banks offer two different deals. Bank A offers 33% interest over a three year period. Bank B offers 10% interest each year for three years. Which bank would you choose?

Percentages - Homework

Section A: Don't copy out the sentences; just give the value of the blank.

A. Finding a Percentage of a quantity

1. To find _____% of something I multiply it by 0.27
2. To find _____% of something I multiply it by 0.84
3. To find _____% of something I multiply it by 0.09

B. What Percentage am I trying to find when I multiply by

1. When I multiply something by 0.34 I am finding _____% of it.
2. When I multiply something by 0.03 I am finding _____% of it.
3. When I multiply something by 0.6 I am finding _____% of it.

C. Increases And Decreases

1. If I have 58% of the original I have _____ it by _____%
2. If I have 164% of the original I have _____ it by _____%
3. If I have 29% of the original I have _____ it by _____%
4. If I have 103% of the original I have _____ it by _____%
5. If I have _____% of the original I have *Decreased* it by 12.5%
6. If I have 162.5% of the original I have _____ it by _____%

D. Increases And Decreases Now as Factors

1. Multiply an amount by 1.37 and I will _____ it by _____%.
2. Multiply an amount by 1.94 and I will _____ it by _____%.
3. Multiply an amount by 0.81 and I will _____ it by _____%.
4. Multiply an amount by 0.29 and I will _____ it by _____%.
5. Multiply an amount by 1.07 and I will _____ it by _____%.
6. Multiply an amount by 0.91 and I will _____ it by _____%.
7. *Multiply an amount by 1.075 and I will _____ it by _____%.

E. **Draw a "flow chart" diagram for each of these**

1. Increase 192 by 34%.
2. Increase 412 by 4%.
3. Decrease 509 by 16%.
4. Decrease 38 by 4.5%.
5. *Calculate the % increase from 37 to 48
6. *Increase 148 by 17%, then decrease the answer by 17%, what do you notice?
7. *Increase x by 10% and then decrease it by 10%, what is the overall percentage change?
- 8.
9. The attention span of a child increases by 30% every year. A 7-year-old can concentrate for 15 minutes. How long can an eight-year-old concentrate for?
10. A year ago a house cost £120,000 but then house prices dropped by 7%. How much does the house cost now?
11. A phone has been reduced from £50 to £37 in a sale. What percentage reduction does this represent?
12. The average attendance at a local football stadium increased from 700 last season to 742 this season. What percentage increase does this represent?
13. Terence's Traders and Oliver's Oddjobs are both companies that start with values of £1000.
 - a. During the first year, the value of Terence's Traders increases by 30%, and during the second year the value of Terence's Traders increases by 10%.
 - b. What is the value of Terence's Traders at the end of the first year?
 - c. What is the value of Terence's Traders at the end of the second year?
 - d. Over the 2 years, the value of Oliver's Oddjobs increases by 40%.

- e. What is the value of Oliver's Oddjobs at the end of the second year?
- f. Why is this not the same as the value of Terence's Traders?

14. I go to a shop to buy a suit. I have a £50 voucher and a 15% teacher discount and rather unusually, I'm allowed to use both. Which should I use first?

15. What is the overall percentage change in the price shares if they experience:

- a. A drop of 15% followed by an increase of 20%.
- b. An increase of 20% followed by a drop of 15%.
- c. A drop of 35% followed by an increase of 30%.
- d. An increase of 30% followed by a drop of 35%.
- e. What do you notice about the order in which you calculate percentage changes?

16. *The price of a theatre ticket has increased by 40%, but the takings have increased by only 26%. What percentage has the number of spectators decrease by? (Hint: It's not 14%!)

17. *Find all the two digit numbers which are increased by 75% when their digits are reversed.