C5

Further percentages

CHAPTER ASSIGNMENT · 80 MARKS

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. You may use a calculator. Show your multiplier or your fraction for every percentage question.

Practice questions from *Cambridge IGCSE Mathematics Core and Extended* (4th edition), Chapter 5 (Further percentages), for classroom use. The Check yourself and Chapter quiz questions are Guru Jazzy's own.

Exercise 5.1 · Percentage of a quantity

5.1.1 Write the percentage equivalent of each fraction.

1/4	2/3	5/8	1 4/5	4 9/10	3 7/8

5.1.2 Write the decimal equivalent of each.

3/4	80%	1/5	7%	1 7/8	1/6

5.1.3 Evaluate.

25% of 80	80% of 125	62.5% of 80	30% of 120	90% of 5	25% of 30
17% of 50	50% of 17	65% of 80	80% of 65	7% of 250	250% of 7

5.1.5 In a class of 30 students, 20% have black hair, 10% have blonde hair and 70% have brown hair. How many students have each colour? [3]

5.1.6 A survey of 120 school children found 55% preferred lamb, 20% chicken, 15% duck and 10% turkey. How many children are in each category? [4]

5.1.8 Of 150 items a shopkeeper sold, 46% were newspapers, 24% pens, 12% books and 18% other items. How many of each did he sell? [4]

Exercise 5.2 · One quantity as a percentage of another

5.2.1 Express the first quantity as a percentage of the second.

24 out of 50	46 out of 125	7 out of 20	45 out of 90	9 out of 20	16 out of 40	13 out of 39	20 out of 35

5.2.2 A hockey team plays 42 matches. It wins 21, draws 14 and loses the rest. Express each result as a percentage of the games played. [3]

5.2.3 In an election A received 24 500 votes, B 18 200, C 16 300 and D 12 000. Express each as a percentage of the total votes cast (1 d.p.). [4]

Exercise 5.3 · Percentage increase and decrease

5.3.1 Increase each number by the given percentage.

150 by 25%	230 by 40%	7000 by 2%	70 by 250%	80 by 12.5%	75 by 62%

5.3.2 Decrease each number by the given percentage.

120 by 25%	40 by 5%	90 by 90%	1000 by 10%	80 by 37.5%	75 by 42%

5.3.3 Find the percentage increase.

50 → 60	75 → 135	40 → 84	30 → 31.5	18 → 33.3	4 → 13

5.3.4 Find the percentage decrease.

50 → 25	80 → 56	150 → 142.5	3 → 0	550 → 352	20 → 19

5.3.5 A farmer increases his yield of 6500 tonnes by 15%. What is his present yield? [2]

5.3.6 A computer priced at $7800 is reduced by 12.5% in a sale. What is the sale price? [2]

5.3.7 A $100 winter coat is reduced by 25% in a sale. After the sale its price is increased by 25%. Find (a) the sale price and (b) the price after the sale. [3]

5.3.8 A farmer takes 250 chickens to market. He sells 8% in the first hour and 10% of those left in the second hour. (a) How many has he sold? (b) What percentage of the original number is that? [4]

5.3.9 The number of fish on a farm rises by about 10% each month. There were 350 fish. How many are there after 12 months, to the nearest 100? [3]

Exercise 5.4 · Reverse percentages (Extended)

5.4.1 Find X.

40% of X is 240	24% of X is 84	85% of X is 765	4% of X is 10	15% of X is 18.75	7% of X is 0.105

5.4.2 Find Y.

125% of Y is 70	140% of Y is 91	210% of Y is 189	340% of Y is 68	150% of Y is 0.375	144% of Y is −54.72

5.4.3 35% of the pages in a textbook are coloured. There are 98 coloured pages. How many pages are in the book? [2]

5.4.4 3500 families in a town own a car. This is 28% of the families. How many families are there? [2]

5.4.5 Isabel scored 88% in a test and got three questions wrong. How many did she get right? [3]

5.4.6 Water expands by 4% when it freezes. What volume of water makes an iceberg of 12 700 000 m^3? Give your answer to 3 s.f. [3]

Student assessment 1

A1.1 Find 40% of 1600 m. [1]

A1.2 A shop increases the price of a $320 television by 8%. What is the new price? [2]

A1.3 A car loses 55% of its value after four years. It cost $22 500 new. What is it worth now? [2]

A1.4 Express the first quantity as a percentage of the second.

40 cm, 2 m	25 min, 1 hour	450 g, 2 kg	3 m, 3.5 m	70 kg, 1 tonne	75 cl, 2.5 l

A1.5 A house bought for $75 000 is resold for $87 000. Find the percentage profit. [2]

A1.6 Shoes priced at $45 are reduced by 20% in a sale. (a) Find the sale price. (b) What percentage increase restores the price to $45? [3]

Student assessment 2

A2.1 Find 30% of 2500 m. [1]

A2.2 A shop reduces its prices by 12.5%. What is the sale price of a $600 desk? [2]

A2.3 A house that cost $72 000 six years ago has increased in value by 35%. What is it worth now? [2]

A2.4 Express the first quantity as a percentage of the second.

35 min, 2 hours	650 g, 3 kg	5 m, 4 m	15 s, 3 min	600 kg, 3 tonnes	35 cl, 3.5 l

A2.5 Shares bought for $600 are sold a year later for $550. Find the percentage depreciation. [2]

A2.6 A $1700 jacket is reduced by $400. On the last day of the sale it is reduced by a further 50%. If it sells on the last day, find (a) the final price and (b) the overall percentage reduction. [4]

Student assessment 3 (Extended)

A3.1 Find the original price for each item.

Selling price	$224	$62.50	$660.24	$38.50
Profit	12%	150%	26%	285%
Original price				

A3.2 Find the original price for each item.

Selling price	$392.70	$2480	$3937.50	$4675
Loss	15%	38%	12.5%	15%
Original price				

A3.3 Sarah obtained 87.5% in an exam by gaining 105 marks. How many marks did she lose? [2]

A3.4 A factory made 38 500 television sets this year, a 10% increase on last year. How many did it make last year? [2]

A3.5 A manufacturer expects to make 24 000 units this year, a 4% decrease on last year. How many units did it make last year? [2]

A3.6 A company increased its output by 10% each year for two years. It made 56 265 units this year. How many did it make two years ago? [3]

Check yourself

1 Explain why decreasing by 15% is the same as multiplying by 0.85. [2]

2 A price rises by 20% and then falls by 20%. Is it back where it started? Show why. [2]

3 A student finds the cost before a 28% profit by taking 28% off $15 360. Explain the mistake and give the correct method. [2]

4 Why must 40 cm and 2 m be in the same units before you write one as a percentage of the other? [2]

Chapter quiz

Q1 What is 35% of 280 m?

A	B	C	D
35 m	80 m	98 m	245 m

Q2 What is 3/16 as a percentage?

A	B	C	D
3.16%	16.3%	18.75%	53.3%

Q3 A girl scores 69 marks out of 75. What percentage is that?

A	B	C	D
69%	75%	92%	94%

Q4 Which multiplier increases an amount by 12%?

A	B	C	D
0.12	0.88	1.012	1.12

Q5 Tools cost $130. In a sale they are 15% off. What is the sale price?

A	B	C	D
$19.50	$110.50	$115	$149.50

Q6 A house bought for $75 000 sells for $87 000. What is the percentage profit?

A	B	C	D
12%	13.8%	16%	87%

Q7 A $100 coat is cut by 25%, then raised by 25%. What is the price now?

A	B	C	D
$75	$93.75	$100	$125

Q8 After a 28% profit a car sells for $15 360. What did it cost?

A	B	C	D
$4300.80	$11 059	$12 000	$19 660.80

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/o-level-mathematics/chapter-5-further-percentages/