

Name: _____

Exam Style Questions

Mean, Median, Mode and Range



Corbettmαths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 50

Video 53

Video 56

Video 57



1. James has a spinner that has sections labelled 1 to 5.
He spins the spinner 10 times.



Here are his scores.

1 4 4 2 3 4 5 1 4 1

- (a) Find the mode.

.....
(1)

- (b) Work out the mean.

.....
(2)

- (c) Work out the range.

.....
(2)

2. Simone records the number of minutes she spends on her mobile phone over 7 days.



8 5 13 6 24 19 10

Find the median.

.....minutes
(2)

3. Here are the ages of 9 children at a birthday party.



10 12 13 10 11 14 15 10 12

- (a) Find the mode.

.....
(1)

- (b) Find out the median.

.....
(2)

- (c) Work out the range.

.....
(2)

- (d) Work out the mean.

.....
(2)

4. A football team played six games.



Here are the number of goals they scored in each game:

6 0 3 2 2 5

- (a) Work out the median number of goals scored.

.....
(2)

- (b) Work out the mean number of goals scored.

.....
(2)

The football team play one more game.

The mean number of goals scored increases to 4.

- (c) Work out the number of goals scored in the seventh game.

.....
(2)

5. Miss Jones gives her class a test.



The test is out of 40 marks.

Here are their scores.

31 29 20 35 32 38 32

- (a) Work out the mode.

.....
(1)

- (b) Work out the median.

.....
(2)

- (c) Work out the range.

.....
(2)

The pass mark for the test is 75%.

- (d) How many students pass the test?

.....
(2)

6. Hannah is recording the number of letters in each word in an article.



These are the first ten lengths.

3 4 5 6 2 4 3 7 3 6

- (a) Work out the median.

.....
(2)

- (b) Calculate the mean.

.....
(2)

The 11th word has 4 letters.

- (c) Tick the box which describes what affect this will have on the mean.

The mean will
decrease

☐

The mean will
remain the same

☐

The mean will
increase

☐

(1)

- (d) Tick the box which describes what affect this will have on the median.

The median will
decrease

☐

The median will
remain the same

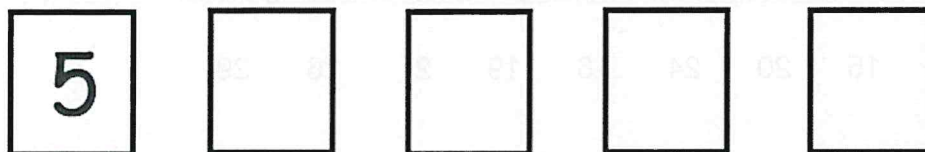
☐

The median will
increase

☐

(1)

7. Shown below are five cards which are arranged in order from smallest to largest



The range of the cards is 4.

The median of the cards is 8.

The mean of the cards is 7.

Work out the 4 missing numbers.

.....,, and

(4)

8. 8 boys and 8 girls from a class run 100m.



The times taken, to the nearest second, for each girl are:

15 20 24 18 19 21 26 29

The mean of the boys' times is 25 seconds.

The range of the boys' times is 14 seconds.

Thomas says that "the boys in our class are faster than the girls."

Is he correct?

9. A set of six numbers have a median of 5.



All of the numbers are even.

The range of the numbers is 6.

The mode of the numbers is 4.

Write down a possible set of six numbers.

.....,,,, and

(4)

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Video 50

Video 53

Video 56

Video 57



1.  James has a spinner that has sections labelled 1 to 5. He spins the spinner 10 times.

Here are his scores.

1 4 4 2 3 4 5 1 4 1

- (a) Find the mode.

4
.....
(1)

- (b) Work out the mean.

$$1 + 4 + 4 + 2 + 3 + 4 + 5 + 1 + 4 + 1 = 29$$


$$29 \div 10 = 2.9$$

2.9
.....
(2)

- (c) Work out the range.

$$5 - 1 = 4$$

4
.....
(2)

2.  Simone records the number of minutes she spends on her mobile phone over 7 days.

8 5 13 6 24 19 10

Find the median.

~~5~~ ~~6~~ ~~8~~ 10 ~~13~~ ~~19~~ ~~24~~

10
.....minutes
(2)

3. Here are the ages of 9 children at a birthday party.



10 12 13 10 11 14 15 10 12

- (a) Find the mode.

.....10.....
(1)

- (b) Find out the median.

~~10~~ ~~10~~ ~~10~~ ~~11~~ 12 ~~12~~ ~~13~~ ~~14~~ ~~15~~

.....12.....
(2)

- (c) Work out the range.

$$15 - 10 = 5$$

.....5.....
(2)

- (d) Work out the mean.

$$10 + 10 + 10 + 11 + 12 + 12 + 13 + 14 + 15 = 107$$

$$107 \div 9 = 11.88888... \quad 11.89 \text{ to 2 decimal places}$$

(2)

4. A football team played six games.



Here are the number of goals they scored in each game:

6 0 3 2 2 5

- (a) Work out the median number of goals scored.

~~0~~ ~~2~~ 2 3 ~~5~~ ~~6~~

$$\begin{array}{r} 2.5 \\ \hline (2) \end{array}$$

- (b) Work out the mean number of goals scored.

$$6 + 0 + 3 + 2 + 2 + 5 = 18$$

$$18 \div 6 = 3$$

$$\begin{array}{r} 3 \\ \hline (2) \end{array}$$

The football team play one more game.

The mean number of goals scored increases to 4.

- (c) Work out the number of goals scored in the seventh game.

One more game, would be the 7th

$7 \times 4 = 28$ goals in total

They have scored 18 so far

$$28 - 18 = 10$$

$$\begin{array}{r} 10 \\ \hline (2) \end{array}$$

5. Miss Jones gives her class a test.
The test is out of 40 marks.



Here are their scores.

31 29 20 35 32 38 32

- (a) Work out the mode.

32
.....
(1)

- (b) Work out the median.

20 29 31 32 32 35 38

32
.....
(2)

- (c) Work out the range.

$$38 - 20 = 18$$

18
.....
(2)

The pass mark for the test is 75%.

- (d) How many students pass the test?

$$75\% \text{ of } 40 = 30$$

20 29 31 32 32 35 38

5
.....
(2)

6. Hannah is recording the number of letters in each word in an article.



These are the first ten lengths.

3 4 5 6 2 4 3 7 3 6

- (a) Work out the median.

2 3 3 3 4 4 5 6 6 7

4
.....
(2)

- (b) Calculate the mean.

$$2+3+3+3+4+4+5+6+6+7 = 43$$

$$43 \div 10 = 4.3$$

4.3
.....
(2)

The 11th word has 4 letters.

- (c) Tick the box which describes what affect this will have on the mean.

The mean will
decrease

☒

The mean will
remain the same

☐

The mean will
increase

☐

(1)

- (d) Tick the box which describes what affect this will have on the median.

The median will
decrease

☐

The median will
remain the same

☒

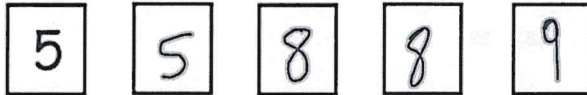
The median will
increase

☐

2 3 3 3 4 4 4 5 6 6 7

(1)

7. Shown below are five cards which are arranged in order from smallest to largest



The range of the cards is 4.

The median of the cards is 8.

The mean of the cards is 7.

Work out the 4 missing numbers.

middle
— adds up to $5 \times 7 = 35$

$$5 + 8 + 9 = 22$$

$$35 - 22 = 13$$

5 8 8 and 9
(4)

8. 8 boys and 8 girls from a class run 100m.



The times taken, to the nearest second, for each girl are:

15 20 24 18 19 21 26 29

The mean of the boys' times is 25 seconds.

The range of the boys' times is 14 seconds.


Thomas says that "the boys in our class are faster than the girls."

Is he correct?

girls mean: 21.5 seconds

girls range: 14 seconds

No. The mean time for the girls to run 100m is 21.5 seconds, which is less than the mean time for the boys. Therefore on average the girls were faster. The ranges for both the boys and girls are equal which suggests there are no outliers that are affecting the mean.

9.  A set of six numbers have a median of 5.
All of the numbers are even.
The range of the numbers is 6.
The mode of the numbers is 4.

Write down a possible set of six numbers.

4 4 4 6 6 and 10
..... and
(4)

Name: _____

Exam Style Questions

Expressing as a Percentage



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

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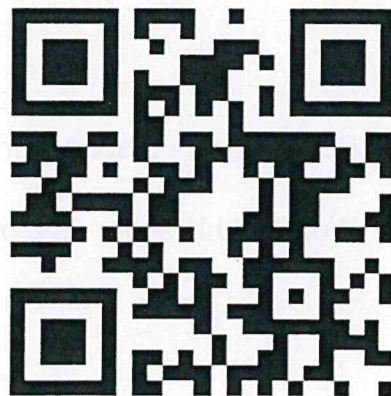
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Revision for this topic

www.corbettmaths.com/contents

Video 237



1. For every 50 students at Hightown School, 29 are girls.



(a) Work out 29 as a percentage of 50.

.....%
(2)

1000 students attend Hightown School.

(b) How many girls attend Hightown School?

.....
(2)

2. David receives £5 from his Grandmother.

He gives £2 to his sister.



Write down £2 as a percentage of £5.

.....%
(1)

3. Roger scores 6 out of 8 in a quiz.



Work out his score as a percentage

.....%
(1)

4. Susan brings 500 flapjacks to a local fair.
Susan sells 450 of the flapjacks.



What percentage of the flapjacks did Susan sell?

.....%
(2)

5. Write 94 out of 200 as a percentage.



.....%
(2)

6. Colin gains 13 out of 20 in a class test.



Work out his mark as a percentage

.....%
(2)

7. Work out 15 as a percentage of 80.



.....%
(2)

8. Express 126 as a percentage of 360



.....%
(2)

9. There are 600 people at a football match.
There 222 children at the match.



Write 222 out of 600 as a percentage.

.....%
(2)

10. Write 42 as a percentage of 64



.....%
(2)

11. Work out £153 as a percentage of £450



.....%
(2)

12. Bryan buys a car costing £15000.



He pays a deposit £6000.

What is £6000 as a percentage of £15000?

.....%
(2)

13. There are 400 beads in a bag.



140 of the 400 beads are yellow.

Work out 140 as a percentage of 400.

.....%
(2)

14. James scored 30 out of 90 in a music test.



He scored 48 out of 150 in a drama test.

James scored 35 out of 120 in an art test.

In which test did James score the highest percentage?

You must show your workings.

.....
(4)

15. The price of a DVD player is £160



In a sale the price is decreased by £28.

Work out the decrease as a percentage of the original price.

.....%
(2)

16. The price of a cinema ticket is reduced from £8 to £7.50



Calculate the reduction as a percentage of the original price.

.....%
(3)

17. The population of a country is 2.85×10^6



The number of people that own a rabbit is 1.24×10^5

Calculate the percentage of the population that own a rabbit.

.....%
(3)

Name: _____

Exam Style Questions

Expressing as a Percentage



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

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Video 237



1. For every 50 students at Hightown School, 29 are girls.



- (a) Work out 29 as a percentage of 50.

$$\frac{29}{50} = \frac{58}{100}$$

.....%
(2)

1000 students attend Hightown School.

- (b) How many girls attend Hightown School?

$$\frac{58}{100} = \frac{580}{1000}$$

.....%
(2)

-
2. David receives £5 from his Grandmother.



He gives £2 to his sister.

Write down £2 as a percentage of £5.

$$\frac{2}{5} = \frac{4}{10} = \frac{40}{100}$$

.....%
(1)

-
3. Roger scores 6 out of 8 in a quiz.



Work out his score as a percentage

$$\frac{6}{8} = \frac{3}{4} = \frac{75}{100}$$

.....%
(1)

4. Susan brings 500 flapjacks to a local fair.
Susan sells 450 of the flapjacks.



What percentage of the flapjacks did Susan sell?

$$\frac{450}{500} = \frac{90}{100}$$

.....90%
(2)

5. Write 94 out of 200 as a percentage.



$$\frac{94}{200} = \frac{47}{100}$$

.....47%
(2)

6. Colin gains 13 out of 20 in a class test.



Work out his mark as a percentage

$$\frac{13}{20} = \frac{65}{100}$$

.....65%
(2)

7. Work out 15 as a percentage of 80.



$$\frac{15}{80}$$

$$15 \div 80 = 0.1875$$
$$0.1875 \times 100$$

.....18.75%
(2)

8. Express 126 as a percentage of 360



$$\frac{126}{360} = 35\%$$

$$126 \div 360 = 0.35$$

.....35%
(2)

9. There are 600 people at a football match.
There 222 children at the match.



Write 222 out of 600 as a percentage.

$$\frac{222}{600} = \frac{37}{100}$$

.....37%
(2)

10. Write 42 as a percentage of 64



$$\frac{42}{64}$$

$$42 \div 64 = 0.65625$$

.....65.625%
(2)

11. Work out £153 as a percentage of £450



$$\frac{153}{450} = 0.34$$

.....34%
(2)

12. Bryan buys a car costing £15000.
He pays a deposit £6000.



What is £6000 as a percentage of £15000?

$$\frac{6000}{15000} = \frac{6}{15} = \frac{2}{5}$$

.....40%
(2)


13. There are 400 beads in a bag.
140 of the 400 beads are yellow.



Work out 140 as a percentage of 400.

$$\frac{140}{400} = \frac{14}{40} = \frac{7}{20}$$

.....35%
(2)

14. James scored 30 out of 90 in a music test.
 He scored 48 out of 150 in a drama test.
 James scored 35 out of 120 in an art test.

In which test did James score the highest percentage?
 You must show your workings.


$$\frac{\text{music}}{33.\dot{3}\%}$$

$$\frac{\text{Drama}}{32\%}$$

$$\frac{\text{Art}}{29.166\%}$$

Music

(4)

15. The price of a DVD player is £160
 In a sale the price is decreased by £28.

Work out the decrease as a percentage of the original price.

$$\frac{28}{160} = \frac{7}{40}$$

$$40 \overline{) 7.000} \quad 0.175$$

17.5 %

(2)

16. The price of a cinema ticket is reduced from £8 to £7.50



Calculate the reduction as a percentage of the original price.

$$\frac{50}{800} = \frac{5}{80}$$

$$80 \overline{) 5.50000} \begin{array}{r} 0.0625 \end{array}$$

.....%
(3)

17. The population of a country is 2.85×10^6



The number of people that own a rabbit is 1.24×10^5

Calculate the percentage of the population that own a rabbit.

$$1.24 \times 10^5 \div 2.85 \times 10^6 = 0.04350877...$$

.....%
(3)

Name: _____

Exam Style Questions

Percentages:
of an amount (calculator)
increasing/decreasing by



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Guidance

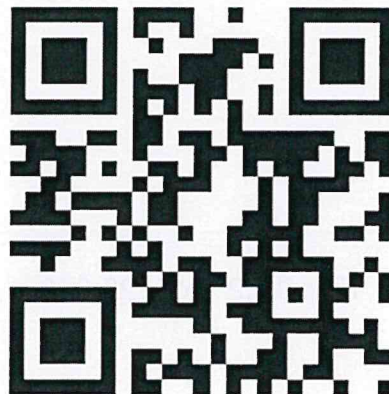
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Revision for this topic

www.corbettmaths.com/contents

Video 235

Video 238



1. Calculate 7% of 340

.....
(2)

2. Find 56% of \$8200

\$.....
(2)

3. Calculate 83% of 9000

.....
(2)

4. Calculate 3.5% of 140g

.....g
(2)

5. Find 18.2% of £25,000

£.....
(2)

6. Increase £2400 by 9%

£.....
(2)

7. Increase 40 miles by 43%

.....miles
(2)

8. Decrease 18000 by 6%

.....
(2)

9. Decrease 712kg by 24%

.....kg
(2)

10. Increase 7900 by 37.4%

.....
(2)

11. Oliver's salary is £18,000 and he is due to get an increase of 4%.
How much will this increase be?

£.....
(2)

12. A new TV is priced at £320
In a sale it is reduced by 45%

Calculate the sale price

£.....
(3)

13. Joanne sees this special offer in a shop.

Special Offer	
iPod	£189
Headphones	£25
Buy both items and receive a 4% discount	

Joanne buys both items.

How much does she pay?

£.....
(3)

14. Barry earns £1300 a month. He spends 30% of this money on rent and 12% on bills.

How much of the £1300 has he left?

£.....
(3)

15. A carton of orange juice contains 540ml.
A special offer carton contains an extra 35%.

How many millilitres of orange juice are in the special offer carton?

.....ml
(3)

16. There are 52800 fans at a football match between Rovers and City.
37% of the fans support Rovers.

How many fans at the match support City?

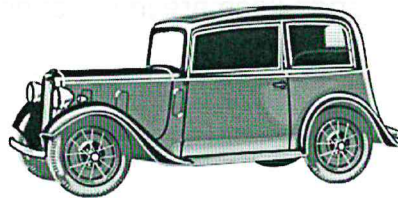
.....
(3)

17. In 2000 the population of a country was 4,580,000
By 2015, the population had increased by 18%

Work out the population in 2015

.....
(3)

- 18.



A vintage car was bought for £9,400
Since then the value of the car has increased by 29%

Calculate the value of the car.

£.....
(3)

19. James is buying a table.
He finds the same table for sale in two different shops.

Table World

£140

Prices include VAT

Tables'R'us

£120

Prices do not include VAT

When buying the table, the rate of VAT was 17.5%

Which shop is better value?

You must show your working.

.....
(3)

-
20. Harriet travelled from Bath to Cardiff.
Her average speed was 58 miles per hour.

There is traffic on the return journey.
Her average speed is reduced by 23%

Work out the average speed on the return journey.

.....mph
(3)

21. Georgina needs to buy petrol for her car.

Her car can hold 70 litres of petrol.

There are already 20 litres of petrol in the tank.

Georgina is going to fill up the petrol tank.

The price of petrol is 115.9p per litre

Georgina has a voucher that gives her 3% off the price of petrol.

How much does Georgina have to pay for the petrol?

£.....

(5)

22. The table gives information about the number of people voting for each party at an election.

Party	Number of Votes
Gold Party	12598
Pink Party	9112
Brown Party	20059
Purple Party	4466

There are 52852 people who can vote
The target was that 88% of people would vote.

Was the target met?

23. A ball is dropped from a height of 3m and is allowed to bounce repeatedly. Each time it rises to a height which is 80% of the height it fell from.

What height does the ball rise to after the second bounce.

.....m
(3)

-
24. James bought a house.
In the first year the value of the house decreased by 10%.
In the second year the value of the house increased by 10%.

Is the house worth more, less, or the same as what James paid for it?
Explain your answer.

.....
(3)

25. Cerys wants to invest £4000 for two years.

Banks' R'us

Compound Interest

6% for the first year

1.5% for each extra year

The Best Bank

Compound Interest

5% for the first year

2.5% for each extra year

Southern Bank

Compound Interest

7% for the first year

0.5% for each extra year

At the end of two years, Cerys wants to have as much money as possible.

Which bank should she invest her £4000 in?

.....m
(4)

Name: _____

Exam Style Questions

Percentages:
of an amount (calculator)
increasing/decreasing by



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Video 235

Video 238



1. Calculate 7% of 340

$$1\% = 340 \div 100 = 3.4 \quad \text{or} \quad 340 \times 0.07$$

$$7\% = 3.4 \times 7 =$$

23.8

(2)

2. Find 56% of \$8200

$$\text{or} \quad 8200 \times 0.56$$

$$1\% = 82$$

$$56\% = 4592$$

\$ 4592

(2)

3. Calculate 83% of 9000

$$\text{or} \quad 9000 \times 0.83$$

$$1\% = 90$$

$$83\% = 7470$$

7470

(2)

4. Calculate 3.5% of 140g

$$\text{or} \quad 140 \times 0.035$$

$$1\% = 1.4$$

$$3.5\% = 4.9$$

4.9

g
(2)

5. Find 18.2% of £25,000

$$\text{or} \quad 0.182 \times 25000$$

$$1\% = 250$$

$$18.2\% = 4550$$

£ 4550

(2)

6. Increase £2400 by 9% or 2400×1.09

$$1\% = 24$$

$$9\% = 216$$

$$2400 + 216$$

$$\pounds 2616 \dots\dots\dots$$

(2)

-
7. Increase 40 miles by 43%

$$1\% = 0.4$$

$$43\% = 17.2$$

or 40×1.43

$$40 + 17.2$$

$$\dots\dots\dots 57.2 \dots\dots \text{miles}$$

(2)

-
8. Decrease 18000 by 6%

$$1\% = 180$$

$$6\% = 1080$$

$$18000 - 1080$$

or 18000×0.94

$$\dots\dots\dots 16920 \dots\dots\dots$$

(2)

-
9. Decrease 712kg by 24%

$$1\% = 7.12$$

$$24\% = 170.88$$

$$712 - 170.88$$

or 712×0.76

$$\dots\dots\dots 541.12 \dots\dots \text{kg}$$

(2)

-
10. Increase 7900 by 37.4%

$$1\% = 79$$

$$37.4\% = 2954.6$$

$$7900 + 2954.6$$

or 7900×1.374

$$\dots\dots\dots 10854.6 \dots\dots\dots$$

(2)

11. Oliver's salary is £18,000 and he is due to get an increase of 4%.
How much will this increase be?

$$1\% = 180$$

$$4\% = 720$$

$$\text{or } 18000 \times 0.04$$

$$\pounds 720$$

(2)

12. A new TV is priced at £320
In a sale it is reduced by 45%

Calculate the sale price

$$1\% = 3.2$$

$$45\% = 144$$

$$320 - 144 =$$

$$\text{or } 320 \times 0.55$$

$$\pounds 176$$

(3)

13. Joanne sees this special offer in a shop.

Special Offer	
iPod	£189
Headphones	£25
Buy both items and receive a 4% discount	

Joanne buys both items.

$$\text{or } 214 \times 0.96$$

How much does she pay?

$$189 + 25 = 214$$

$$1\% = 2.14$$

$$4\% = 8.56$$

$$214 - 8.56$$

$$\pounds 205.44$$

(3)

14. Barry earns £1300 a month. He spends 30% of this money on rent and 12% on bills.

How much of the £1300 has he left?

$$\begin{array}{l} \text{rent} \\ 1\% = 13 \\ 30\% = 390 \end{array} \quad \begin{array}{l} \text{bills} \\ 1\% = 13 \\ 12\% = 156 \end{array}$$

$$\begin{aligned} \text{or } 1300 \times 0.3 &= 390 \\ 1300 \times 0.12 &= 156 \\ 1300 - 390 - 156 &= 754 \end{aligned}$$

$$1300 - 390 - 156$$

£ 754
(3)

15. A carton of orange juice contains 540ml.
A special offer carton contains an extra 35%.

How many millilitres of orange juice are in the special offer carton?

$$\begin{array}{l} 1\% = 5.4 \\ 35\% = 189 \end{array} \quad \text{or } 540 \times 1.35$$

$$540 + 189$$

729 ml
(3)

16. There are 52800 fans at a football match between Rovers and City.
37% of the fans support Rovers.

How many fans at the match support City?

$$63\% \text{ support City}$$

$$\text{or } 52800 \times 0.63$$

$$\begin{array}{l} 1\% = 528 \\ 63\% = 33264 \end{array}$$

33264
(3)

17. In 2000 the population of a country was 4,580,000
By 2015, the population had increased by 18%

Work out the population in 2015

$$1\% = 45800$$

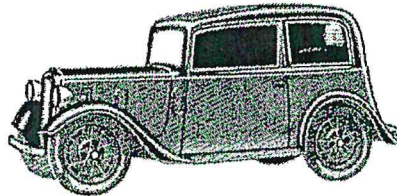
$$18\% = 824400$$

$$\text{or } 4580000 \times 1.18$$

$$5404400$$

(3)

18.



A vintage car was bought for £9,400
Since then the value of the car has increased by 29%

Calculate the value of the car.

$$1\% = 94$$

$$29\% = 2726$$

$$\text{or } 9400 \times 1.29$$

$$£ 12126$$

(3)

19. James is buying a table.
He finds the same table for sale in two different shops.

Table World

£140

Prices include VAT

Tables'R'us

£120

Prices do not include VAT

When buying the table, the rate of VAT was 17.5%

$$1\% = 1.2$$

$$17.5\% = 21$$

Which shop is better value?

You must show your working.

$$120 \times 1.175 = \underline{\underline{£141}} \text{ with VAT}$$

Table World
.....
(3)

20. Harriet travelled from Bath to Cardiff.
Her average speed was 58 miles per hour.

There is traffic on the return journey.

Her average speed is reduced by 23%

Work out the average speed on the return journey.

$$58 \times 0.77$$

or

$$1\% = 0.58$$

$$23\% = 13.34$$

$$58 - 13.34$$

.....44.66.....mph
(3)

21. Georgina needs to buy petrol for her car.

Her car can hold 70 litres of petrol.

There are already 20 litres of petrol in the tank. Needs 50 litres

Georgina is going to fill up the petrol tank.

The price of petrol is 115.9p per litre

Georgina has a voucher that gives her 3% off the price of petrol.

How much does Georgina have to pay for the petrol?

$$50 \times 115.9 = 5795p \text{ or } £57.95$$

$$1\% = 0.5795$$

$$3\% = 1.7385$$

She saves £1.74 (or £1.73)

$$£57.95 - £1.74$$

$$\begin{array}{r} £ 56.21 \\ \hline \text{or } 56.22^{(5)} \end{array}$$

22. The table gives information about the number of people voting for each party at an election.

Party	Number of Votes
Gold Party	12598
Pink Party	9112
Brown Party	20059
Purple Party	4466

total 46235

There are 52852 people who can vote
The target was that 88% of people would vote.

Was the target met?

$$88\% \text{ of } 52852 = 46509.76 \text{ (46509 or 46510)}$$

No the target was not met.

23. A ball is dropped from a height of 3m and is allowed to bounce repeatedly. Each time it rises to a height which is 80% of the height it fell from.

What height does the ball rise to after the second bounce.

$$\begin{aligned} 1^{\text{st}} \text{ bounce} &= 300 \times 0.8 = 240 \text{ cm} \\ 2^{\text{nd}} \text{ bounce} &= 240 \times 0.8 = 192 \text{ cm} \end{aligned}$$

1.92
.....m
(3)

24. James bought a house.
In the first year the value of the house decreased by 10%.
In the second year the value of the house increased by 10%.

Is the house worth more, less, or the same as what James paid for it?
Explain your answer.

If the house cost £100,000

$$1^{\text{st}} \text{ year} = £90,000$$

$$2^{\text{nd}} \text{ year} = £99,000$$

£x

$$1^{\text{st}} \text{ year} = 0.9x$$

$$\begin{aligned} 2^{\text{nd}} \text{ year} &= 0.9x \times 1.1 \\ &= 0.99x \end{aligned}$$

less
.....
overall 1% less (3)

25. Cerys wants to invest £4000 for two years.

Banks 'R' us
Compound Interest
6% for the first year
1.5% for each extra year

The Best Bank
Compound Interest
5% for the first year
2.5% for each extra year

Southern Bank
Compound Interest
7% for the first year
0.5% for each extra year

At the end of two years, Cerys wants to have as much money as possible.

Which bank should she invest her £4000 in?

Banks 'R' us 1st year = £4240
2nd year = £4303.60

The Best Bank 1st year = £4200
2nd year = £4305

Southern Bank 1st year = £4280
2nd year = £4301.40

.....
(4)
The Best Bank

Name: _____

Exam Style Questions



Compound Interest

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 236



1. Sebastian leaves £3000 in the bank for two years.
It earns compound interest of 2% per year.



Calculate the total amount Sebastian has in the bank at the end of the two years.

£.....
(2)

2. Fiona leaves £1600 in the bank for four years.
It earns compound interest of 4% each year.



Calculate the total amount Fiona has in the bank at the end of the four years.

£.....
(3)

3. A car was bought for £18000.
Its value depreciated by 15% each year for the first three years.



What was its value at the end of the three years?

£.....
(3)

4. Sally bought a piano for £2200.



In each year the value of the piano increases by 11% of its value at the start of that year.

- (a) Find the value of the piano after one year.

£.....
(2)

- (b) Calculate after how many complete years the value of the piano will be at least £3200.

.....years
(2)

-
5. Natalie invests £600 for 2 years at 10% per year compound interest.
How much interest does she earn?



£.....
(2)

6. Jenny invests £400 for two years at 5% compound interest, paid yearly.
Tim says that the interest Jenny will receive will be £40.



Is Tim right?
Explain your answer.

(3)

7. When a tennis ball is dropped, it bounces and then rises.



The ball rises to 60% of the height from which it is dropped.
The ball is dropped from a height of 2 metres.

- (a) Calculate the height of the rise after the first bounce.

.....m
(1)

- (b) Calculate the height of the rise after the second bounce.

.....m
(1)

The ball carries on bouncing, each time rising to 60% of the last rise.

- (c) For how many bounces does it rise to a height greater than 20cm?
Show your working

.....
(2)

8. The value of a television was £600 on 1st March 2013.



Every four months, the value of the television decreased by 8% of its value at the start of that four months.

What was the value of the television on 1st March 2014?

£.....
(3)

-
9. £5200 is invested at 2.8% compound interest per annum.



How many years will it take for the investment to exceed £7000.

.....years
(3)

10. A radioactive substance decays over time.
Every year its mass decreases by 14%.



How many years will it take for 500kg of the substance to decay to a mass less than 200kg?

.....years
(3)

11. Martyn has some money to invest and sees this advert.



Bank of Maths

Double your money in 15 years.

The average annual growth for your investment is 4.5%

Will Martyn double his money in 15 years by investing his money with “Bank of Maths?”

You **must** show your workings.

(4)

12. James weighed 100kg.



His target was to weigh 80kg or less.

His weight decreased by 3% each month.

Has he achieved his target after six months?

Show your workings.

(3)

13. A fish tank has sprung a leak, at the base of the tank.



5% of the water is lost every minute.

How much water is lost from the tank after ten minutes?

.....
(3)

Name: _____

Exam Style Questions



Compound Interest

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

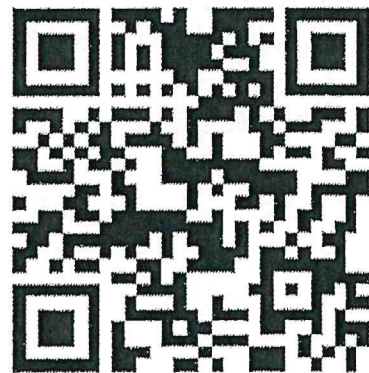
Guidance

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3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 236



1. Sebastian leaves £3000 in the bank for two years.
It earns compound interest of 2% per year.



Calculate the total amount Sebastian has in the bank at the end of the two years.

1st year
 $2\% \text{ of } 3000 = 60$

£3060

2nd year
 $2\% \text{ of } 3060 = 61.20$

£3121.20

£ 3121.20
(2)

2. Fiona leaves £1600 in the bank for four years.
It earns compound interest of 4% each year.



Calculate the total amount Fiona has in the bank at the end of the four years.

$$1600 \times 1.04^4 = £1871.77$$

£ 1871.77
(3)

3. A car was bought for £18000.
Its value depreciated by 15% each year for the first three years.



What was its value at the end of the three years?

$$18000 \times 0.85^3 = £11054.25$$

£ 11054.25
(3)

4. Sally bought a piano for £2200.



In each year the value of the piano increases by 11% of its value at the start of that year.

- (a) Find the value of the piano after one year.

$$2200 \times 1.11$$

$$\pounds 2442$$

(2)

- (b) Calculate after how many complete years the value of the piano will be at least £3200.

$$1 \text{ year} = 2200 \times 1.11 = 2442$$

$$2 \text{ years} = 2200 \times 1.11^2 = 2710.62$$

$$3 \text{ years} = 2200 \times 1.11^3 = 3008.7882$$

$$4 \text{ years} = 2200 \times 1.11^4 = 3339.75$$

~~3~~ 4 years (2)

5. Natalie invests £600 for 2 years at 10% per year compound interest. How much interest does she earn?



1st year

$$10\% \text{ of } 600 = 60$$

$$\pounds 660$$

2nd year

$$10\% \text{ of } 660 = 66$$

$$\pounds 726$$

$$\begin{array}{r} 726 \\ - 600 \\ \hline 126 \end{array}$$

$$\pounds 126$$

(2)

6. Jenny invests £400 for two years at 5% compound interest, paid yearly.
Tim says that the interest Jenny will receive will be £40.



Is Tim right? *No*
Explain your answer.

$$\begin{array}{l} \text{First year } 5\% \text{ of } 400 = £20 \\ \text{Second year } 5\% \text{ of } 420 = £21 \\ \hline £41 \end{array}$$

She earns £41 interest

(3)

7. When a tennis ball is dropped, it bounces and then rises.



The ball rises to 60% of the height from which it is dropped.
The ball is dropped from a height of 2 metres.

- (a) Calculate the height of the rise after the first bounce.

$$2 \times 0.6$$

$$\underline{\quad 1.2 \quad} \text{m} \\ (1)$$

- (b) Calculate the height of the rise after the second bounce.

$$1.2 \times 0.6$$

$$\underline{\quad 0.72 \quad} \text{m} \\ (1)$$

The ball carries on bouncing, each time rising to 60% of the last rise.

- (c) For how many bounces does it rise to a height greater than 20cm?
Show your working

$$\begin{array}{l} 1 \text{ bounce} \rightarrow 1.2 \text{m} \\ 2 \text{ bounces} \rightarrow 0.72 \text{m} \\ 3 \text{ bounces } (2 \times 0.6^3) \rightarrow 0.432 \text{m} \\ 4 \text{ bounces } (2 \times 0.6^4) \rightarrow 0.2592 \text{m} \\ 5 \text{ bounces } (2 \times 0.6^5) \rightarrow 0.15552 \text{m} \end{array}$$

$$\underline{\quad 4 \text{ bounces} \quad} \\ (2)$$

8. The value of a television was £600 on 1st March 2013.



Every four months, the value of the television decreased by 8% of its value at the start of that four months.

What was the value of the television on 1st March 2014? *1 year = 3 lots of 4 months*

$$600 \times 0.92^3 = 467.2128$$

£ 467.21
(3)

9. £5200 is invested at 2.8% compound interest per annum.



How many years will it take for the investment to exceed £7000.

$$5200 \times 1.028^6 = 6137.083491$$

$$5200 \times 1.028^8 = 6485.57164$$

$$5200 \times 1.028^{10} = 6853.84834$$

$$5200 \times 1.028^{11} = 7045.756093$$

11 years
(3)

10. A radioactive substance decays over time.
Every year its mass decreases by 14%.



How many years will it take for 500kg of the substance to decay to a mass less than 200kg?

$$500 \times 0.86^5 = 235.21..$$

$$500 \times 0.86^6 = 202.28...$$

$$500 \times 0.86^7 = 173.96..$$

.....7.....years
(3)

11. Martyn has some money to invest and sees this advert.



Bank of Maths

Double your money in 15 years.

The average annual growth for your investment is 4.5%

Will Martyn double his money in 15 years by investing his money with "Bank of Maths?"

You **must** show your workings.

If Martyn had £100

$$100 \times 1.045^{15} = £193.53$$

He will not double his money in 15 years with 4.5% interest

(4)

12. James weighed 100kg.



His target was to weigh 80kg or less.

His weight decreased by 3% each month.

Has he achieved his target after six months?

Show your workings.

$$100 \times 0.97^6 = 83.2972\text{kg}$$

No, he will not.

(3)

13. A fish tank has sprung a leak, at the base of the tank.



5% of the water is lost every minute.

How much water is lost from the tank after ten minutes?

$$\text{Initial} = 100\% (100)$$

$$100 \times 0.95^{10} = 59.8737\% \text{ left in the tank}$$

$$100 - 59.8737 = 40.1263\% \text{ lost}$$

40.1263%

(3)

Name: _____

Exam Style Questions



Reverse Percentages

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

Secondary

Video 240



1. Patrick invested money into a special savers bank account.
Each year money in the account earns 4% interest.



After one year, the total amount of money in the account was £291.20

How much did Patrick invest?

£.....
(3)

-
2. Ottawa is the capital city of Canada.
The population of Ottawa is 890,000.
This population is 2.5% of the total population of Canada.



What is the total population of Canada?

.....
(3)

3. A lamp is on sale at £22.05
This is a 10% reduction of the normal price.



What was the price of the lamp before the reduction?

£.....
(3)

-
4. Jacob buys a watch costing £84
This cost includes VAT at a rate of 20%.



How much is the watch without VAT?

£.....
(3)

5.

Jennifer has 54 DVDs.



This number of DVDs is 80% more than the number she had last month.

How many DVDs did Jennifer have last month?

.....
(3)

6.

Lauren is given a 12% pay rise.



Her new salary is £24,080

What was Lauren's salary before the pay rise?

£.....
(3)

7. A limited edition bag of flour contains 25% more than the standard bag.
The limited edition bag contains 650g of flour.



How much flour is in the standard bag?

.....g
(3)

8. A fish tank sprung a leak and loses 45% of its water.
There is now 363 litres of water in the fish tank.



How much water was in the fish tank before the leak?

.....l
(3)

9. Mrs Reed buys a car costing £11760
This cost includes VAT at a rate of 20%.



How much is the VAT?

£.....
(3)

-
10. In a sale the price of a sofa is reduced by 70%.
The sale price is £255



Work out the price before the sale.

£.....
(3)

11. There are 6000 people at an ice hockey match.



The announcer says this is exactly 40% more people than the previous match.

Explain why the announcer is incorrect.

(4)

Name: _____

Exam Style Questions



Reverse Percentages

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

Secondary

Video 240



1. Patrick invested money into a special savers bank account.
Each year money in the account earns 4% interest.



After one year, the total amount of money in the account was £291.20

How much did Patrick invest?

$$104\% = £291.20$$

$$1\% = 2.8$$

$$100\% = £280$$

£ 280

(3)

2. Ottawa is the capital city of Canada.
The population of Ottawa is 890,000.
This population is 2.5% of the total population of Canada.



What is the total population of Canada?

$$2.5\% = 890,000$$

$$1\% = 356000$$

$$100\% = 35,600,000$$

35,600,000

(3)

3.

A lamp is on sale at £22.05

This is a 10% reduction of the normal price.



What was the price of the lamp before the reduction?

$$90\% = 22.05$$

$$1\% = 0.245$$

$$100\% = 24.50$$

£ 24.50
(3)

4.

Jacob buys a watch costing £84

This cost includes VAT at a rate of 20%.



How much is the watch without VAT?

$$120\% = £84$$

$$1\% = 0.7$$

$$100\% = £70$$

£ 70
(3)

5.



Jennifer has 54 DVDs.

This number of DVDs is 80% more than the number she had last month.

How many DVDs did Jennifer have last month?

$$180\% = 54$$

$$1\% = 0.3$$

$$100\% = 30$$

30

(3)

6.



Lauren is given a 12% pay rise.

Her new salary is £24,080

What was Lauren's salary before the pay rise?

$$112\% = 24080$$

$$1\% = 215$$

$$100\% = 21500$$

£ 21500

(3)

7. A limited edition bag of flour contains 25% more than the standard bag.
The limited edition bag contains 650g of flour.



How much flour is in the standard bag?

$$125\% = 650$$

$$1\% = 5.2$$

$$100\% = 520$$

520

g
(3)

8. A fish tank sprung a leak and loses 45% of its water.
There is now 363 litres of water in the fish tank.



How much water was in the fish tank before the leak?

$$55\% = 363$$

$$1\% = 6.6$$

$$100\% = 660$$

660

l
(3)

9.



Mrs Reed buys a car costing £11760
This cost includes VAT at a rate of 20%.

How much is the VAT?

$$120\% = 11760$$

$$1\% = 98$$

$$100\% = 9800$$

$$11760 - 9800$$

£ 1960
(3)

10.



In a sale the price of a sofa is reduced by 70%.
The sale price is £255

Work out the price before the sale.

$$30\% = 255$$

$$1\% = 8.5$$

$$100\% = 850$$

£ 850
(3)

11. There are 6000 people at an ice hockey match.
The announcer says this is exactly 40% more people than the previous match.



Explain why the announcer is incorrect.

$$140\% = 6000$$

$$1\% = 42.857\ldots$$

whole number.

$$100\% = 4285.71\ldots$$



Since this is not an integer,
the announcer must be wrong

(4)

