

Examination Practice Questions

You should have:

A ruler, protractor, compasses, a pen, pencil, eraser, calculator.
For some questions, you may need tracing paper.

Instructions

- Use **black** ink or ball-point pen.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The marks for each question are shown in brackets.
- Use the number of marks for each question as a guide as to how much time to spend on each question. As a rough guide, you can multiply the number of marks by 1.2 to see how many minutes you should spend on a question.
- Questions been carefully compiled from or modelled on a variety of past papers and will generally get more challenging as the document progresses. Some of the later questions will go beyond the core grade level for this topic.

Advice

- Read each question carefully before you start to answer it.
- Don't forget to have fun.
- Check your answers at the end.

WHILST A PARTICULAR METHOD
BEEN TAKEN FOR THESE QUESTIONS,
YOU CAN USE ALTERNATIVE METHOD.

GENERAL
MARKING
STRUCTURE

M1 FOR A VALID STRATEGY
: M1 FOR A COMPLETE METHOD
A1 CORRECT ANSWER

Q1.

AtoZrevision.com

480,000 tickets were sold for a tennis tournament last year.

This represents 80% of all the available tickets.

Calculate the total number of tickets that were available for this tournament.

B1

$$480000 = 80\%$$

A1

$$\frac{480000}{80\%}$$

$$\text{or } \frac{480000}{0.8}$$

$$\underline{\hspace{1cm}} \\ 600,000$$

(3 marks)

M1

Q2.

AtoZrevision.com

In a sale, the normal price of a book is reduced by 30%.

The sale price of the book is £2.80.

Work out the normal price of the book.

$$2.80 = 70\% \text{ OF ORIGINAL}$$

B1

A1

$$\frac{2.80}{70\%}$$

$$70\%$$

$$\underline{\hspace{1cm}} \\ £4$$

(2 marks)

M1

Q3.

AtoZrevision.com

Kingsley buys a portable Bluetooth speaker.

The speaker has been reduced by 20% in a sale.

He pays £72 for the speaker in the sale.

What was the original price of the speaker?

B1

$$72 = 80\% \text{ OF ORIGINAL}$$

A1

$$\frac{72}{80\%}$$

$$\underline{\hspace{1cm}} \\ £90$$

(2 marks)

M1

Q4.

AtoZrevision.com

Jon bought a car.
The price of Jon's car had been reduced by 20%.
Jon paid £7680 for his car.

What was the price of the car before the reduction?

(81)

$$7680 = 80\% \text{ OF ORIGINAL}$$

$$\frac{7680}{80\%} = m1$$

$$9600$$

(3 marks)

(A1)

Q5.

AtoZrevision.com

A coat is on sale in a shop at a special price of £149.40.
The shop says this is a saving of 17% on their normal price.

Work out the shop's normal price for the coat.

(51)

$$149.40 = 83\% \text{ OF ORIGINAL}$$

$$\frac{149.40}{83\%} = m1$$

$$180$$

(3 marks)

(A1)

Q6.

AtoZrevision.com

Bytes is a shop that sells computers and digital cameras.

In a sale, normal prices are reduced by 14%.

The sale price of a digital camera is £129.86

Work out the normal price of the digital camera.

(B1)

$$129.86 = 86\% \text{ OF ORIGINAL}$$

$$\frac{129.86}{86\%} = m1$$

$$151$$

(3 marks)

(A1)

Each year Wenford Hospital records how long patients wait to be treated in the Accident and Emergency department.

In 2015 patients waited 11% less time than in 2014.

In 2015 the average time patients waited was 68 minutes.

Work out the average time patients waited in 2014. Give your answer to the nearest minute.

$$68 = 89\% \text{ OF ORIGINAL}$$

$$\frac{68}{89\%} =$$

mi

31

76
A1 (3 marks)

The value of Michelle's car has decreased by 15%

The car now has a value of £13 600

Work out the value of Michelle's car before the decrease.

$$13600 = 85\% \text{ OF ORIGINAL}$$

$$\frac{13600}{85\%} =$$

mi

31

£16000
A1 (3 marks)

Tariq buys a laptop. He gets a discount of 5% off the normal price.

Tariq pays £551 for the laptop.

Work out the normal price of the laptop.

$$551 = 95\% \text{ OF ORIGINAL}$$

$$\frac{551}{95\%} =$$

mi

31

£580
A1 (3 marks)

Henri wants to insure his car.

He gets a discount of 15% off the normal price.

Henri pays 952 euros for his car insurance after the discount.

Work out the discount that Henri gets.

$$952 = 85\% \text{ OF ORIGINAL}$$

$$\frac{952}{85\%} =$$

$$\frac{168}{100} =$$

A number is increased by 35%!
The result is 324

Work out the number.

$$324 = 135\% \text{ OF ORIGINAL}$$

$$\frac{324}{135\%} =$$

$$\frac{240}{100} =$$

Chengbo sold a house for 180000 yuan.

The amount for which he sold the house is 24% more than the amount he paid for the house.

Work out how much Chengbo paid for the house.

Give your answer correct to 3 significant figures.

$$180000 = 124\% \text{ OF ORIGINAL}$$

$$\frac{180000}{124\%} =$$

$$\frac{145,000}{100} =$$

Q13.

AtoZrevision.com

Emily spent £2400 on holiday in 2017.
This was 20% more than she spent on holiday in 2016.

Calculate the amount she spent on holiday in 2016.

B1

$$2400 = 120\% \text{ OF ORIGINAL}$$

$$\frac{2400}{120\%} =$$

$$\frac{\pounds 2000}{\text{A1}}$$

(3 marks)

Q14.

AtoZrevision.com

A restaurant bill, including 15% service charge, was £98.90.

How much was the service charge?

B1

$$98.90 = 115\% \text{ OF ORIGINAL}$$

$$\frac{98.90}{115\%} =$$

$$\frac{\pounds 12.90}{\text{A1}}$$

(3 marks)

Q15.

AtoZrevision.com

In 2018, the population of Sydney was 5.48 million.
This was 22% of the total population of Australia.

Work out the total population of Australia in 2018
Give your answer correct to 3 significant figures.

B1

$$5.48 = 122\% \text{ OF ORIGINAL}$$

$$\frac{5.48}{122\%} =$$

$$\frac{24.9 \text{ m}}{\text{A1}}$$

(3 marks)

Here are the types of sandwiches sold in a cafe last week.

Sandwiches

Tuna

Cheese

Chicken

Egg

56 tuna sandwiches were sold. This was 40% of the total number of sandwiches sold.

Work out the total number of sandwiches sold.

$$56 = 40\% \text{ OF ORIGINAL} \quad \text{A1}$$

$$\frac{56}{40\%} = \text{M1} \quad \underline{140}$$

(2 marks)

The price of all rail tickets increased by 5 %.

The price of a rail ticket from London to Ipswich increased by £2.30

Work out the price of the ticket before the increase.

$$2.30 = 5\% \text{ OF ORIGINAL} \quad \text{A1}$$

$$\frac{2.30}{5\%} = \text{M1} \quad \underline{£46}$$

(2 marks)

The price of all rail season tickets to London increased by 4%.

The price of a rail season ticket from Cambridge to London increased by £121.60

Work out the price before this increase.

$$121.60 = 4\% \text{ OF ORIGINAL} \quad \text{B1}$$

$$\frac{121.60}{4\%} = \text{M1} \quad \underline{£3040}$$

(3 marks)

Q19.

AtoZrevision.com

In a sale, all normal prices are reduced by 15%.

The normal price of a food processor is reduced by 13.50 dollars.

Work out the normal price of the food processor.

$$13.50 = 15\% \text{ OF ORIGINAL}$$

$$\frac{13.50}{15\%} =$$

 m_1
 $\$90$
 A_1

(3 marks)

Q20.

AtoZrevision.com

A shop, Furniture 4U, had a sale.

In the sale, normal prices were reduced by 15%.

The normal price of a chair was reduced in the sale by \$24.

Work out the normal price of the chair.

$$24 = 15\% \text{ OF ORIGINAL}$$

$$\frac{24}{15\%} =$$

 m_1
 $\$160$
 A_1

(3 marks)

Q21.

AtoZrevision.com

In a sale, normal prices are reduced by 17%.

The normal price of a washing machine is reduced by £42.50

Work out the sale price of the washing machine.

$$42.50 = 17\% \text{ OF ORIGINAL}$$

$$\frac{42.50}{17\%} =$$

 m_1
 $\pounds 207.50$
 A_1

(3 marks)

Marie gets a basic monthly salary of £560 plus a commission of 22% of her sales that month.

In April her total salary was £3299

Work out her sales in April.

$$3299 - 560 = 2739$$

$$2739 = 22\%$$

$$\frac{2739}{22\%} = M_1$$

$$\underline{\underline{£12450}}$$

(3 marks)

Georgie had her roof repaired.

She was charged an extra 2.5% for late payment.

She had to pay a total of £977.85.

Calculate how much she would have saved if she had paid on time.

$$977.85 = 102.5\%$$

$$\frac{977.85}{102.5\%} =$$

$$\underline{\underline{£23.85}}$$

(3 marks)

On Wednesday, the price of 1 litre of petrol was £1.26

The price of petrol on Wednesday was 5% more than the price of petrol on the previous Monday.

Calculate the price of 30 litres of petrol on the previous Monday.

$$1.26 = 105\%$$

$$\frac{1.26}{105\%} = 1.2$$

$$1.2 \times 30 =$$

$$\underline{\underline{£36}}$$

(3 marks)

Rami bought a house on 1st January 2015.

In 2015, the house increased in value by 15%

In 2016, the house decreased in value by 8%

On 1st January 2017, the value of the house was \$687700

What was the value of the house on 1st January 2015?

$$* 687700 \div 1.058$$

M1 CORRECT FIRST STEP

M1 COMPLETE METHOD

$$687700 \div 0.92 = 747500$$

$$687700 \div 1.15 = 598000$$

$$1.15 \times 0.92 = 1.058 *$$

A1

(3 marks)

\$650,000

Eloy's height was 125 cm when his age was 7 years.

His height was 153 cm when his age was 12 years.

Eloy's height at the age of 12 years was 85% of his height at the age of 20 years.

Work out Eloy's height when his age was 20 years.

$$\frac{153}{85\%} \times 100$$

M1

$$153 \div 85\%$$

B1

A1

180cm

(3 marks)

A savings account pays interest at a rate of $R\%$ per year.

Jack invests £5500 in the account for one year.

At the end of the year, Jack pays tax on the interest at a rate of 40%.

After paying tax, he gets £79.20.

Work out the value of R .

$$79.20 \div 60\% = 132$$

$$\frac{132}{5500} \times 100 =$$

P1

A1

2.4%

(3 marks)

Paintings are sold in an art gallery.

The cost of a painting has $k\%$ commission added to it.

Tax of 15% is then added to the total cost to give the price to pay.

Layla correctly calculates the price to pay by multiplying the cost of the painting by 1.403.

Work out the value of k .

$$\frac{1.403}{1.15} = 1.22$$

m_1

A_1

22

(3 marks)

B_1 1.15 or 15%

Helen delivers parcels.

On Tuesday, Helen delivered 20% more parcels than on Monday.

On Wednesday, Helen delivered 50% fewer parcels than on Tuesday.

On Wednesday, Helen delivered 72 parcels.

Calculate the number of parcels that Helen delivered on Monday.

$$\frac{72}{50\%} = 144$$

m_1

A_1

120

(3 marks)

$$\frac{144}{120\%} = 120$$

m_1

Naomi is given a 10% pay decrease.

Her new wage is £252 per week.

What would be her weekly wage if, instead, she had received a 10% pay increase?

$$\frac{252}{90\%} = 280$$

m_1

A_1

308

(3 marks)

$$280 \times 110\% =$$

m_1

QUESTIONS FROM MATHEMATICAL COMPETITIONS

Q1.

AtoZrevision.com

A store increased the original price of a shirt by a certain percent and then lowered the new price by the same amount. Given that the resulting price was 84% of the original price, by what percent was the price increased and decreased?

Tick the correct answer.

$$(1-x)(1+x) = 0.84$$

x = FRACTION OF DISCOUNT

SOLVE: $x = 0.4$

16

20

28

36

40

Q2.

AtoZrevision.com

The price of a train ticket increased by 5% and then decreased by 20% in a special offer. It was then £4 less expensive than its original price.

What was the original price of the ticket? Tick the correct answer.

$$P \times 105\% \times 80\% = P - 4$$

SOLVE:

$$P = \frac{4}{0.16} = 25$$

£8.60

£13

£20.40

£25

£26.40

The kettle in Keith's kitchen is 80% full. After 20% of the water in it has been poured out, there are 1152ml of water left.

What volume of water does Keith's kitchen kettle hold when it is full?

$$20\% \text{ of } 80\% = 16\%$$

WATER REMAINING AFTER KEITH POURS

20% IS 64%..

WHEN FULL, KETTLE HOLDS

$$\frac{1152}{64} \times 100 = 1800$$

When I have walked 20% of the way to school, I have 1200 metres more to walk than when I have 20% of the walk remaining.

How far, in metres, is it from my home to my school?

HOME \longleftrightarrow SCHOOL

$$60\% = 1200$$

$$\frac{1200}{60\%} = \boxed{2000}$$

At halftime, Boarwarts Academy had scored all of the points so far in their annual match against Range Hill School. In the second half, each side scored three points. At the end of the match, Boardwarts Academy had scored 90% of the points.

What fraction of the points in the match was scored in the second half? Give your fraction in its simplest form.

3 POINTS IN 2ND HALF = 10% OF TOTAL

BA SCORED 3 IN 2ND HALF TOO.

% POINTS SCORED AFTER HALF TIME WAS 20% = $\frac{1}{5}$

After playing 500 games, my success rate in Spider Solitaire is 49%. Assuming I win every game from now on, how many extra games do I need to play in order that my success rate increases to 50%?

→ won $500 \times 49\% = 245$.

255 WERE LOST.

10 WINS NEEDED FOR 50% WIN RATE

Werner's salary is 20% of his boss's salary.

IS 5 TIMES HIS SALARY.

By what percentage is his boss's salary larger than Werner's salary?

500%.

$$500\% - 100\% = \underline{400\%}$$



On a Monday, all prices in Isla's shop are 10% more than normal. On Friday all prices in Isla's shop are 10% less than normal. James bought a book on Monday for £5.50. What would be the price of another copy of this book on Friday?

$$M = 110\% \quad 5.50 = 110\%$$

$$F = 90\%$$

$$\frac{5.50}{110\%} \times 0.9 = \underline{\underline{4.50}}$$