



EXAM PAPERS PRACTICE

GCSE OCR Math J560

Reverse Percentage

Answers

*"We will help you to
achieve A Star "*



Answer 1

The normal price of a television is reduced by 30% in a sale.

The sale price of the television is £350

Work out the normal price of the television.

70% LEFT.

SALE PRICE IS 70% OF NORMAL PRICE

$$SP = \frac{70}{100} \times NP$$

$$100 \times 350 = \frac{70}{100} \times NP \times 100 \quad (\text{GROF})$$

$$\frac{100 \times 350}{70} = \frac{70 \times NP}{70}$$

$$NP = \frac{100 \times 350}{70}$$

$$= 100 \times 5$$

$$NP = \underline{\underline{£500}}$$

PERCENTAGES

WRITE DOWN A STATEMENT CONNECTING THE 'BEFORE' AND 'AFTER'



Answer 2

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

MULTIPLY BY 0.89

In 2015 patients waited 11% less time than in 2014
In 2015 the average time patients waited was 68 minutes.

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

PERCENTAGES
WRITE DOWN A
STATEMENT
CONNECTING THE
'BEFORE' AND 'AFTER'

WAIT₁₅ IS 89% OF WAIT₁₄

$$W_{15} = 0.89 \times W_{14}$$

$$\frac{68}{0.89} = \frac{0.89 \times W_{14}}{0.89} \rightarrow W_{14} = \frac{68}{0.89} = \underline{\underline{76}} \text{ minutes}$$

FOR PART (a)

PERCENTAGE DECREASES (THE BEST WAY!)
TO DECREASE BY, SAY, 3%.
THINK: WE WANT 97%. SO WE
MULTIPLY BY $\frac{97}{100}$ (=0.97)



EXAM PAPERS PRACTICE

Answer 3

Jules buys a washing machine.

20% VAT is added to the price of the washing machine.

Jules then has to pay a total of £600

What is the price of the washing machine with **no** VAT added?

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%. 20%.

THINK: WE WANT 103%. 120%. SO WE

MULTIPLY BY $\frac{103}{100}$ (= 1.03) $\frac{120}{100} = 1.2$

PERCENTAGES

WRITE DOWN A
STATEMENT

CONNECTING THE
'BEFORE' AND 'AFTER'

PRICE WITH VAT IS 20% MORE THAN PRICE WITHOUT VAT

$$\text{PRICE IN VAT} = 1.2 \times \text{PRICE W/O VAT}$$

$$\frac{600}{1.2} = \frac{1.2}{1.2} \times \text{PRICE W/O VAT}$$

$$\begin{aligned} \text{PRICE W/O VAT} &= \frac{600}{1.2} \\ &= \underline{\underline{£500}} \end{aligned}$$

$$\begin{array}{r} 50 \\ 12 \overline{) 600} \end{array}$$

$$\frac{600}{12} = 50$$

$$\frac{600}{1.2} = 500$$



Answer 4

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

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

(a) Work out the percentage increase in Eloy's height between the ages of 7 and 12 years.

Percentage increase = (difference / original) x 100

$$153 - 125 = 28$$

$$28 / 125 \times 100 = 22.4$$

22.4

%



Answer 5

Claire is making a loaf of bread.
A loaf of bread loses 12% of its weight when it is baked.
Claire wants the baked loaf of bread to weigh 1.1 kg.
Work out the weight of the loaf of bread before it is baked.

LOSE 12%. THINK: WE WANT 88%.

PERCENTAGES
WRITE DOWN A
STATEMENT
CONNECTING THE
'BEFORE' AND 'AFTER'

(WEIGHT) AFTER IS 88% OF (WEIGHT) BEFORE

$$\text{AFTER} = \frac{88}{100} \times \text{BEFORE}$$

$$\frac{1.1}{0.88} = \frac{0.88}{0.88} \times \text{BEFORE}$$

$$\text{BEFORE} = \frac{1.1}{0.88} = \underline{\underline{1.25 \text{ kg}}}$$

PERCENTAGE DECREASES (THE BEST WAY!)

TO DECREASE BY, SAY, 3%.

THINK: WE WANT 97%. SO WE

MULTIPLY BY $\frac{97}{100}$ (=0.97)



Answer 6

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

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

$$153 = 85\% = 0.85$$

$$153 / 0.85 = 180\text{cm}$$

180 cm

Answer 7

The hospital has a target to reduce the average time patients wait to be treated in the Accident and Emergency department to 60 minutes in 2016

(b) Work out the percentage decrease from 68 minutes to 60 minutes.

$$\text{PERCENTAGE DECREASE} = \frac{\text{ACTUAL DECREASE}}{\text{ORIGINAL VALUE}} \times 100$$

$$= \frac{8}{68} \times 100$$

$$= \underline{11.8\%} \quad \text{.....\%}$$



Answer 8

In a sale normal prices are reduced by 20%.

A washing machine has a sale price of £464

By how much money is the normal price of the washing machine reduced?

SALE PRICE IS 80% OF NORMAL PRICE

$$SP = \frac{80}{100} \times NP$$

$$\frac{464}{0.8} = \frac{0.8 \times NP}{0.8}$$

$$NP = \frac{464}{0.8}$$

$$= \underline{\underline{£580}}$$

$$\text{Reduction} = 580 - 464$$

$$= \underline{\underline{£116}}$$

REVERSE PERCENTAGES
WRITE DOWN A
STATEMENT CONNECTING
THE TWO THINGS



Answer 9

On 9th May, 2009, there were 3440 people in the world with swine flu. Of these people, 1639 were in the USA.

- (a) Express 1639 as a percentage of 3440
Give your answer correct to 1 decimal place.

$$\frac{1639}{3440} \times 100 = 47.6$$
$$\underline{\underline{47.6}} \dots\dots\dots \%$$

Answer 10

- (a) Helen's savings increased from £155 to £167.40

Work out the percentage increase in Helen's savings.

(Difference / original) x 100 = % increase

$$\frac{167.40 - 155}{155} = \frac{12.4}{155} = 0.08$$

$$0.08 \times 100 = 8\%$$

$$\underline{\underline{8}} \dots\dots\dots \%$$



Answer 11

A clothes shop has a sale.

In the sale, normal prices are reduced by 12%

The normal price of a shirt is £30

(a) Work out the sale price of the shirt.

Reduction by 12 % = multiple by 0.88

$$30 \times 0.88 = 26.4$$

£ 26.40



Answer 12

A shop has a sale.

Microwave ovens
 $\frac{1}{3}$ off normal price

Combination ovens
40% off normal price

A microwave oven has a sale price of £90
A combination oven has a sale price of £84

Which of these ovens has the greater normal price?
You must show all your working.

PERCENTAGES
WRITE DOWN A
STATEMENT
CONNECTING THE
'BEFORE AND AFTER'

COMBINATION

SALE PRICE IS 60% OF NORMAL PRICE

$$SP = \frac{60}{100} \times NP$$

$$100 \times 84 = \frac{60}{100} \times NP \times 100$$

$$\frac{8400}{60} = \frac{60 \times NP}{60}$$

$$\frac{7 \times 12 \times 10 \times 10}{6 \times 10} = NP$$

$$NP = \underline{\underline{£140}}$$

MICROWAVE

SALE PRICE IS $\frac{2}{3}$ OF NORMAL PRICE

$$SP = \frac{2}{3} \times NP$$

$$3 \times 90 = \frac{2}{3} \times NP \times 3$$

$$\frac{270}{2} = \frac{2 \times NP}{2}$$

$$\underline{\underline{£135}} = NP$$

} COMBINATION
OVEN
HAS
GREATER
PRICE



Answer 13

The 3440 people who had swine flu on 9th May was an increase of 37.6% on the number of people who had swine flu on 8th May.

(b) Calculate the number of people who had swine flu on 8th May.

$$3440 / 1.376$$

2500

.....

Answer 14

(b) The normal price of a food processor is reduced by 13.50 dollars. Work out the normal price of the food processor.

$$15 \% \text{ of the price} = 13.50$$

Therefore $13.50/15\% = \text{original Price}$

$$13.50 / 0.15 = 90$$

90 dollars



Answer 15

The price of a coat is reduced by £9 in the sale.

(b) Work out the normal price of the coat.

12 % of the original price of the coat = £9

$$n \times 0.12 = 9$$

$$9/0.12 = n$$

$$n = 75$$

£ 75