

CALCULATOR SECTION: Show necessary working in the space provided

- Ques.1.** a The rainfall average for Sydney is 1 220 mm and for Brisbane is 1 200 mm. What is the ratio, in simplest form, of the rainfall of Sydney to the rainfall of Brisbane?
b The daily hours of sunshine average in Sydney is 6.8 hours and in Brisbane is 8 hours. What is the ratio, in simplest form, of the average hours of sunshine in Sydney to that in Brisbane?

Ans: (a) _____

(b) _____

- Ques.2.** The 1986 census gave the following breakdown figures of Australia's then population of 15 602 156.
.281 878 were born in Italy
.137 637 were born in Greece
.56 341 were born in Lebanon
.211 670 were born in New Zealand

A newspaper wishes to inform the public on comparisons between these numbers. They do this by simplifying the ratios as much as possible so that they make sense to the ordinary reader. Give a ratio which the newspaper might use to describe the comparison of:

- a Italian-born Australians to Greek-born Australians
b Greek-born Australians to Lebanese-born Australians
c Australians born in Italy, Greece, Lebanon or New Zealand to all other Australians (those born in Australia or elsewhere).

Ans (a) _____ (b) _____ (c) _____

- Ques.3.** A typical human heart pumps 65 mL of blood per beat at an average of 70 times per minute.
a Calculate the number of litres pumped in 1 minute.
b Calculate the number of litres pumped by Jane's heart in her 1.5 years.

Ans: (a) _____

(b) _____

Ques.4. Australians consumed 100.9 L of milk per person in 1988–89 financial year. The population at that time was 16.833 million.

- a Calculate the number of litres of milk consumed per person per day.
- b Calculate the total number of litres of milk drunk on an average day.

Ans: (a) _____

(b) _____

Ques.5. A car tyre turns 100 times in 46 metres.

- a How many times does it turn in 1 metre?
- b How many times does it turn in 1 km?

Ans: (a) _____

(b) _____

Ques.6. In a 25%-off sale a 10% further discount was given for large purchases. As well, a further 3% was deducted for cash payment. A customer receiving all three discounts was to pay \$75.48. What was the original full price?

Ans: _____

Ques.7.

Successive discounts of 10% and 20% on a purchase of \$300 means the purchaser receives a discount of 10% of \$300 and then a discount of 20% on the balance of \$270 (\$300 less 10% of \$300). Another faster method is to calculate 80% of (90% of \$300).

- a Does it matter if the discounts are calculated in the order 10% then 20% or 20% then 10%?
- b Do two successive discounts of 50% and 50% mean the article is free?
- c i Do three successive discounts of $33\frac{1}{3}\%$ mean the article is free?
 - ii Calculate the purchase price on \$1 000 with three successive discounts of $33\frac{1}{3}\%$, $33\frac{1}{3}\%$ and $33\frac{1}{3}\%$.
 - iii To what single discount do the three successive discounts correspond?

Ans:

(a)

(b)

(c) (i)

(ii)

(iii)

- Ques.8. In 1966, average weekly earnings were approximately \$65.00
In 1996, average weekly earnings were approximately \$650.00
- a What is the ratio of increase?
 - b Based on this, what would you expect the cost of the following to be in 1996? Their cost in 1966 is given.
 - i newspaper (Sunday) \$0.10c
 - ii student rail ticket \$0.15c
 - iii petrol 8.9c per litre
 - c What might the cost of the following have been in 1966?
 - i a loaf of bread (in 1996 the price was \$1.90)
 - ii a postage stamp (in 1996 the cost was 45c)
 - iii a phone call (in 1996 the cost was 40c)
 - d Do you think some items are relatively cheaper in 1996 than in 1966 or vice versa?

Ans: (a) _____

(b) (i) _____

(ii) _____

(iii) _____

(c) (i) .. _____

(ii) .. _____

(iii) .. _____

(d) _____

.....

.....

Ques.9. Change the following recurring decimals to fractions.

(a) $0.\overline{56}$

(b) $0.\overline{1278}$

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- Ques.1.** a The rainfall average for Sydney is 1 220 mm and for Brisbane is 1 200 mm. What is the ratio, in simplest form, of the rainfall of Sydney to the rainfall of Brisbane?
 b The daily hours of sunshine average in Sydney is 6.8 hours and in Brisbane is 8 hours. What is the ratio, in simplest form, of the average hours of sunshine in Sydney to that in Brisbane?

Ans: (a) 61:60
 (b) 17:20

(2m)

- Ques.2.** The 1986 census gave the following breakdown figures of Australia's then population of 15 602 156.
 281 878 were born in Italy
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A newspaper wishes to inform the public on comparisons between these numbers. They do this by simplifying the ratios as much as possible so that they make sense to the ordinary reader. Give a ratio which the newspaper might use to describe the comparison of:

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281 878 : 137 637 137 637 : 56 341 687 526 : 14 914 630

Ans (a) 2:1 (b) 3:1 (c) 1:20
15:7 etc. 7:3 etc.

(3m)

- Ques.3.** A typical human heart pumps 65 mL of blood per beat at an average of 70 times per minute.
 a Calculate the number of litres pumped in 1 minute.
 b Calculate the number of litres pumped by Jane's heart in her 15 years.

Ans: (a) 4.55 L
 (b) 35 872 200 L

(2m)

1m

- Ques.4.** Australians consumed 100.9 L of milk per person in 1988-89 financial year. The population at that time was 16.833 million.

- a Calculate the number of litres of milk consumed per person per day.
 b Calculate the total number of litres of milk drunk on an average day.

Ans: (a) 0.276 L or 0.28 L or 280 mL
 (b) 4,653,286.849 ⇒ 4.65 million L

(2m)

- Ques.5.** A car tyre turns 100 times in 46 metres.
 a How many times does it turn in 1 metre?
 b How many times does it turn in 1 km?

Ans: (a) 2.17 times
 (b) 2174 turns

(2m)

- Ques.6.** In a 25%-off sale a 10% further discount was given for large purchases. As well, a further 3% was deducted for cash payment. A customer receiving all three discounts was to pay \$75.48. What was the original full price?

Discounted Price = \$75.48
 Previous Price before last discount = 103% of \$75.48
 = ~~\$55.51884~~ \$77.7444
 Next Previous Price before discount = 110% of ~~\$55.51884~~ \$77.7444
 = \$85.51884

Ans: Original Price = 125% of \$85.51884
\$106.90

(2m)

\$115.28

6m

Ques.7.

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- iii To what single discount do the three successive discounts correspond?

Ans:

- (a) NO
- (b) NO
- (c) (i) NO

5m

(ii) \$296.30 → $66\frac{2}{3}\%$ of \$1000 = \$666 $\frac{2}{3}$
 $66\frac{2}{3}\%$ of \$666 $\frac{2}{3}$ = \$444 $\frac{2}{3}$
 $66\frac{2}{3}\%$ of \$444 $\frac{2}{3}$ = \$296.30

[could also x by $\frac{2}{3}$ etc]

Discount = Original Price - Discounted Price
 = \$1000 - \$296.30
 = \$703.70

Single Discount = $\frac{\$703.70}{\$1000} \times 100\%$
 = 70.37%

5m

Ques.8.

In 1966, average weekly earnings were approximately \$65.00
 In 1996, average weekly earnings were approximately \$650.00

- a What is the ratio of increase?
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 - i newspaper (Sunday) \$0.10c
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 - iii a phone call (in 1996 the cost was 40c)

d Do you think some items are relatively cheaper in 1996 than in 1966 or vice versa?

\$585 : \$65 [Remember Increase : Original]

Ans: (a) 9 : 1

(b) (i) \$0.90

(ii) \$1.35

(iii) 80c

(c) (i) 21c

(ii) 5c

(iii) 4.4c

(d) Relatively the same -- maybe petrol totally different?

8m

Ques.9. Change the following recurring decimals to fractions.

(a) 0.56̄
 Let 100x = 56.565656...
 - 10x = 5.65656...

 99x = 56
 x = $\frac{56}{99}$

3m

(b) 0.1278̄
 Let 10000x = 1278.12781278...
 - 10x = 0.12781278...

 9999x = 1278
 x = $\frac{1278}{9999}$
 = $\frac{142}{1111}$

3m

14m