

0580

IGCSE Maths.

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Number

Revision - Part.1

SP-20 | M-20 | S-20 | W-19 | W-20

Note: The following topics are in

Revision - Part.2

1. Percentage and applications
2. Speed and time
3. Venn diagrams.

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1. Here is a list of numbers.
Put a ring around a number with largest value. --- [1]

- 0.3030
- $\frac{1}{3}$
- 0.0330
- $\frac{3}{10}$
- 33% SP-20/02/Q3

Solution: $\frac{1}{3}$ $\left\{ \begin{array}{l} \because \frac{3}{10} = 0.3 \\ \frac{1}{3} = 0.\bar{3} = 0.333... \end{array} \right.$ $\left\{ \begin{array}{l} 33\% = \frac{33}{100} = 0.33 \end{array} \right.$

2. Explain why $\sqrt{3}$ is irrational. --- [1]

SP-20/02/Q10

Solution: $\sqrt{3}$ cannot be written in fraction $\frac{p}{q}$ form, where p and q are integers, $q \neq 0$.
 [or $\sqrt{3} = 1.73205080756888...$ is a non-terminating and non-repeating decimal]

3. Write the recurring decimal $0.3\bar{2}$ as a fraction. you must show all your working. --- [2]

SP-20/02/Q20

Solution: Let $a = 0.3\bar{2} = 0.32222... \dots$ ①
 $\Rightarrow 10a = 3.2222... \dots$ ② (multiply ① by 10)
 $100a = 32.2222... \dots$ ③ (multiply ① by 100)
 Subtracting ② from ③ $\Rightarrow 90a = 29$
 $\Rightarrow a = \frac{29}{90} \checkmark$

4. Write the recurring decimal $0.2\bar{6}$ as a fraction. you must show all your working. --- [2]

M-20/22/Q13

Solution: Let $a = 0.2\bar{6} = 0.26666... \dots$ ①
 $\Rightarrow 10a = 2.6666... \dots$ ② [multiply ① by 10]
 $\Rightarrow 100a = 26.6666... \dots$ ③ [multiply ② by 10]
 Subtracting ② from ③ $\Rightarrow 90a = 24 \Rightarrow a = \frac{24}{90} = \frac{4}{15} \checkmark$

5. Calculate: $\frac{5}{8} + \sqrt[3]{340}$ --- [1]

W-19/22/Q2

Solution: $\frac{5}{8} + \sqrt[3]{340} = 0.625 + 6.9795$
 $= 7.6045$
 $= \underline{7.605} \checkmark$

6. Write the recurring decimal $0.\dot{1}\dot{7}$ as a fraction in its simplest form. [W-20/20/Q13] -- [3]

Solution: Let $x = 0.\dot{1}\dot{7} = 0.1777\dots$

$$\Rightarrow 10x = 1.777\dots \quad \text{--- (1)}$$

$$\Rightarrow 100x = 17.777\dots \quad \text{(2)}$$

Subtracting (1) from (2) $90x = 16 \Rightarrow x = \frac{16}{90} = \frac{8}{45} \checkmark$

7. Write two hundred thousand and seventeen in figures. -- [1]

Solution: 200 017 ✓

1. Without using calculator, work out $1\frac{7}{12} + \frac{13}{20}$. [SP-20/22/Q14] ---[3]
Give your answer as a mixed fraction in its simplest form.

Solution: $1\frac{7}{12} + \frac{13}{20} = \frac{19}{12} + \frac{13}{20}$

$$= \frac{19 \times 5 + 13 \times 3}{60}$$

$$= \frac{95 + 39}{60} = \frac{134}{60} = \frac{67}{30} = 2\frac{7}{30} \checkmark$$

$12 = 2^2 \times 3$
 $20 = 2^2 \times 5$
 L.C.M = $2^2 \times 3 \times 5 = 60$
 $\frac{7}{12}, \frac{13}{20}$

2. Use a calculator to find the decimal value of $\frac{\sqrt{29 - 3 \times 32^{0.4}}}{3}$... [1]

Solution: $\frac{\sqrt{29 - 3 \times 32^{0.4}}}{3} = 1.374 \checkmark$ [SP-20/22/Q19]

3. 3.56, 5, $\sqrt{196}$, 8, $\sqrt{7}$, 12

From the list, write down a number that is

- (a) a multiple of 3 --[1]
- (b) a cube number --[1]
- (c) a prime number. --[1]
- (d) an irrational number. [M-20/22/Q1] --[1]

Answers: (a) 12 ✓ (b) 8 ✓ (c) 5 (d) $\sqrt{7}$

4. Find the highest odd number that is a factor of 60 and a factor of 90. [S-20/21/Q2] --[1]

Solution: $60 = 2^2 \times 3 \times 5$
 $90 = 2 \times 3^2 \times 5$
 \therefore Highest odd number which a factor of both 60 and 90 = $3 \times 5 = 15 \checkmark$

5. $234 = 2 \times 3^2 \times 13$, $1872 = 2^4 \times 3^2 \times 13$, $234 \times 1872 = 438048$
Using this information to write 438048 as a product of prime factors. [S-20/21/Q7] --[1]

Solution: $438048 = 234 \times 1872$
 $= 2 \times 3^2 \times 13 \times 2^4 \times 3^2 \times 13$
 $= \underline{2^5 \cdot 3^4 \cdot 13^2} \checkmark$

6. Without using a calculator, work out $(2\frac{1}{3} - \frac{7}{8}) \times \frac{6}{25}$ --[4]
Give your answer as a fraction in its simplest form. [S-20/21/Q8]

Solution: $(2\frac{1}{3} - \frac{7}{8}) \times \frac{6}{25} = (\frac{7}{3} - \frac{7}{8}) \times \frac{6}{25}$
 $= \left(\frac{7 \times 8 - 7 \times 3}{24}\right) \times \frac{6}{25} = \left(\frac{56 - 21}{24}\right) \times \frac{6}{25}$
 $= \frac{35}{24} \times \frac{6}{25} = \underline{\frac{7}{20}} \checkmark$

7. 32 33 34 35 36 37 38 39

From this list of numbers, write down

- (a) a multiple of 8 --[1]
 (b) a square number --[1]
 (c) a prime number --[1]

[S-20/23/Q1]

Solution: (a) 32 \checkmark (b) 36 \checkmark (c) 37 \checkmark

8. Without using a calculator, work out $3\frac{1}{4} - 2\frac{2}{3}$ --[3]
Give your answer as a fraction in its simplest form. [S-20/23/Q7]

Solution: $3\frac{1}{4} - 2\frac{2}{3} = \frac{13}{4} - \frac{8}{3}$
 $= \frac{13 \times 3 - 8 \times 4}{12} = \frac{39 - 32}{12} = \underline{\frac{7}{12}} \checkmark$

9. Without using a calculator, work out $\frac{5}{16} \times 1\frac{1}{7}$ --[2]
Give your answer a fraction in its simplest form. [W-19/21/Q8]

Solution: $\frac{5}{16} \times 1\frac{1}{7} = \frac{5}{16} \times \frac{8}{7} = \underline{\frac{5}{14}} \checkmark$

10. Find the highest common factor (HCF) of 84 and 105. ---[2]
[W-19/23/Q4]

Solution: $84 = 2^2 \times 3 \times 7$
 $105 = 3 \times 5 \times 7$
H.C.F = $3 \times 7 = 21$ ✓

11. Without using a calculator, work out $\frac{2}{3} + \frac{1}{4} \times \frac{2}{3}$ ---[4]
Give your answer as a fraction in its simplest form. [W-19/23/Q15]

Solution: $\frac{2}{3} + \frac{1}{4} \times \frac{2}{3} = \frac{2}{3} (1 + \frac{1}{4})$
 $= \frac{2}{3} (\frac{4+1}{4})$
 $= \frac{2 \times 5}{3 \times 4} = \frac{5}{6}$ ✓

Alternate method:
 $\frac{2}{3} + \frac{1}{4} \times \frac{2}{3} = \frac{2}{3} + \frac{1}{6}$
 $= \frac{2 \times 2 + 1}{6} = \frac{5}{6}$ ✓

12. Work out $2\frac{2}{3} \times 2\frac{3}{4}$, you must show all your working and give your answer as a mixed number in simplest form. ---[3]
[W-20/21/Q6]

Solution. $2\frac{2}{3} \times 2\frac{3}{4} = \frac{8}{3} \times \frac{11}{4}$
 $= \frac{88}{12} = \frac{22}{3} = 7\frac{1}{3}$ ✓

13(a) 1, 2, 3, 5 and 7 are all common factors of two numbers. Write down the digit that the two numbers must end in. ---[1]

(b) Write 84 as a product of its prime factors. ---[2]
[W-20/21/Q8]

Solution (a) $1 \times 2 \times 3 \times 5 \times 7 = 210 \Rightarrow$ unit digit = 0 ✓
(b) $84 = 2 \times 2 \times 3 \times 7$ (or $2^2 \times 3 \times 7$) ✓

$$\begin{array}{r} 2 \overline{)84} \\ \underline{42} \\ 2 \overline{)42} \\ \underline{21} \\ 3 \overline{)21} \\ \underline{21} \\ 0 \end{array}$$

14. Insert one pair of brackets to make this calculation correct. ---[1]
 $7 - 5 - 3 + 4 = 9$ [W-20/22/Q2]

Solution: $7 - (5 - 3) + 4$ ✓

15. Work out $\frac{5}{6} \div 1\frac{1}{3}$, you must show all your working and give the answer as a fraction in its simplest form. [W-20/22/Q10] --- [3]

Solution: $\frac{5}{6} \div 1\frac{1}{3} = \frac{5}{6} \div \frac{4}{3} = \frac{5}{6} \times \frac{3}{4} = \frac{15}{24} = \frac{5}{8} \checkmark$

16. Calculate, $\frac{4}{\sqrt{0.0025}}$ [W-20/23/Q2] --- [1]

Solution: $\frac{4}{\sqrt{0.0025}} = \frac{4}{\sqrt{0.05 \times 0.05}} = \frac{4}{0.05} = \frac{400}{5} = 80 \checkmark$

17. Work out $1\frac{1}{7} \times 2\frac{1}{10}$, you must show all your working and give your answer as a mixed number in its simplest form. [W-20/23/Q9] --- [3]

Solution: $1\frac{1}{7} \times 2\frac{1}{10} = \frac{8}{7} \times \frac{21}{10} = \frac{168}{70} = \frac{12}{5}$ (Divide N^o and D^o by 14)
 $= 2\frac{2}{5} \checkmark$

Money and Currency.

classmate

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Page

C-1

1. Rashid changes 30000 rupees to dollars when the exchange rate is $\$ = 68.14$ rupees. How many dollars does he receive. --[2]

[W-19/22/Q7]

Solution: $\text{Rs } 68.14 = \$1 \Rightarrow \text{Rs } 1 = \$ \frac{1}{68.14}$
 $\Rightarrow \text{Rs } 30000 = \$ \frac{1}{68.14} \times 30000 = \$ 44.27$ (or $\$ 44.3$) ✓

2. A new locomotive costs \$64. Calculate the cost of locomotive in rupees, when the exchange rate is 1 rupee = \$0.0154. Give your answer correct to 10 rupees.

[M-20/42/Q1C] ---[2]

Solution: $\$ 0.0154 = \text{Rupee } 1$
 $\$ 1 = \text{Rupee } \frac{1}{0.0154}$
 $\Rightarrow \$ 64 = \text{Rs } \frac{1}{0.0154} \times 64 = \text{Rs } 4155.84$
 $= \text{Rupees } 4160$ (Correct to Rs 10)

3. Karel changed \$300 into 3819 Namibian dollars. Complete the statement, $\$1 = \text{--- Namibian dollars}$ --[1]

[W-20/42/Q7(C)]

Solution: $\$ 300 = 3819$ Namibian dollars
 $\Rightarrow \$ 1 = \frac{3819}{300} = 12.97$ ✓ Namibian dollars.

4. Thor changes 40000 Icelandic Krona into dollars, when the exchange rate is 1 Krona = \$0.0099. ---[1]
Workout how many dollars he receives. [W-20/23/Q5]

Solution: 1 Krona = \$0.0099
 $\therefore 40000 \text{ Krona} = 0.0099 \times 40000 = \$ 396$ ✓

Rules of Indices and Standard form of a number

D.1

1. Calculate the value of $(2.3 \times 10^{-3}) + (6.8 \times 10^{-4})$ --- [1]
Give your answer in standard form, [M-20/22/Q8]

Solution: $2.3 \times 10^{-3} + 6.8 \times 10^{-4}$
 $= 10^{-3} (2.3 + 6.8 \times 10^{-1})$
 $= (2.3 + 0.68) \times 10^{-3}$
 $= \underline{2.98 \times 10^{-3}} \checkmark$

2. Write 2^{-4} as a decimal, [S-20/22/Q8] -- [1]

Solution: $2^{-4} = \frac{1}{2^4} = \frac{1}{16} = 0.0625 \checkmark$

21. Calculate $(3 \times 10^{-3})^3$, Give your answer in standard form. -- [1]
[S-20/22/Q16]

Solution: $(3 \times 10^{-3})^3 = 3^3 \times (10^{-3})^3$
 $= 27 \times 10^{-9}$
 $= 2.7 \times 10^1 \times 10^{-9} = \underline{2.7 \times 10^{-8}} \checkmark$

3. Write 15060

(a) in words

(b) in standard form

--- [1]

[W-19/21/Q4] -- [1]

Solution: (a) Fifteen thousand and sixty ✓

(b) $15060 = \underline{1.506 \times 10^4} \checkmark$

4. Calculate $\sqrt{256^{0.25} + 4 \times 8}$ [W-19/23/Q2] [1]

Solution: $\sqrt{256^{0.25} + 4 \times 8} = \sqrt{(44)^{\frac{1}{4}} + 32}$
 $= \sqrt{(4)^{4 \times \frac{1}{4}} + 32} = \sqrt{4 + 32}$
 $= \sqrt{36} = \underline{6} \checkmark$

5. Write in standard form

(a) 72000

-- [1]

(b) 0.0018

-- [1]

[W-19/23] Q. 5]

Solution: (a) $72000 = 7.2 \times 10^4$ ✓

(b) $0.0018 = 1.8 \times 10^{-3}$ ✓

6.

$$2^{12} \div 2^{\frac{k}{2}} = 32;$$

Find the value of k.

[M-20/42] Q5(b) -- [2]

Solution: $2^{12} \div 2^{\frac{k}{2}} = 32$

$$\Rightarrow 2^{(12 - \frac{k}{2})} = 2^5 \Rightarrow 12 - \frac{k}{2} = 5$$

$$\Rightarrow \frac{k}{2} = 12 - 5 = 7 \Rightarrow k = 14$$
 ✓

7. Work out $(3 \times 10^{199}) + (2 \times 10^{201})$. Give your answer in standard form.

[W-20/22] Q14]

Solution: $3 \times 10^{199} + 2 \times 10^{201}$

$$= 3 \times 10^{199} + 2 \times 10^2 \times 10^{199}$$

$$= 10^{199} (3 + 200) = 203 \times 10^{199}$$

$$= 2.03 \times 10^2 \times 10^{199}$$

$$= 2.03 \times 10^{201}$$
 ✓

8.(a)(i) The Earth has a surface area of approximately 510 100 000 km²

Write this area in standard form. [W-20/43] Q1] -- [1]

Solution: $510\,100\,000 = 5.101 \times 10^8$ ✓

(b)(i) Brunei's surface area is 5.77×10^3 and

Maldives surface area is 3.00×10^2

Find the total surface area of Brunei and Maldives.

Solution: Total surface area = $5.77 \times 10^3 + 3.00 \times 10^2$

$$= 10^2 (5.77 \times 10 + 3.00)$$

$$= (57.7 + 3.00) \times 100 = 60.70 \times 100$$

$$= 6070 \text{ km}^2$$
 ✓

Accuracy

E-1

Rounding numbers, Significant figure, upper and lower bounds.

1. The mass, m kilograms, of a horse is 429 kg, correct to the nearest kilogram. Complete the statement about the value of m : $\dots \leq m < \dots$ [2]

[SP-20/02/Q11]

Answer: $428.5 \leq m < 429.5$ ✓

2. A car travels at a constant speed.

It travels a distance of 146.2 m, correct to 1 decimal place.

This takes 7 seconds, correct to the nearest second.

Calculate the upper bound for the speed of the car. [3]

[M-20/22/Q18]

Solution: distance d : $146.15 \leq d < 146.25$ m [Given $d = 146.2$ m]

for time $t = 7$ s: $6.5 \leq t < 7.5$

for upper bound of speed = $\frac{\text{upper bound of distance}}{\text{lower bound of time}}$

$$= \frac{146.25}{6.5} = 22.5 \text{ m/s} \checkmark$$

3. $P = 2(W + h)$

$W = 12$ correct to the nearest whole number

$h = 4$ correct to the nearest whole number

Find out the upper bound for the value of P . [2]

[S-20/21/Q18]

Solution: $W = 12$, $11.5 \leq W < 12.5$

$h = 4$, $3.5 \leq h < 4.5$

\therefore upper bound of $P = 2[\text{upper bound of } W + \text{upper bound of } h]$

$$= 2[12.5 + 4.5] = 2 \times 17 = 34 \checkmark$$

4. Ella's height is 175 cm, correct to the nearest 5 cm. [1]

Write down the upper bound of Ella's height.

[S-20/22/Q15]

Solution: height $h = 175$ correct to the nearest 5 cm

$$175 - 2.5 \leq h < 175 + 2.5 \quad \left(\frac{5}{2} = 2.5\right)$$

\therefore upper bound of height = 177.5 cm ✓

5. Calculate. $\frac{16.379 - 0.879}{4.2} \times 1.241$ --- [2]

Give your answer correct to 2 significant figures.

[W-19/21/Q3]

Solution: Given number = $\frac{16.379 - 0.879}{4.2} \times 1.241$

= $15.5 \times 1.241 = 4.58$

∴ Value of the number correct to 2 s.f = 4.6 ✓

6. The side of square is 15.1 cm, correct to 1 decimal place. Find the upper bound of the area of the square. --- [2]

[W-19/21/Q12]

Solution: Given side of the square $l = 15.1$ correct to 1 decimal place

⇒ $15.05 \leq l < 15.15$

⇒ upper bound of $l = 15.15$

∴ upper bound of area = (upper bound of l)²

= $(15.15)^2 = \underline{229.5225 \text{ cm}^2}$ ✓

7. The space allowed for each tent is a rectangle measuring 8m by 6m, each correct to the nearest metre. Calculate the upper bound for the area of the space allowed for each tent. --- [2]

[S-20/43/Q1(d)]

Solution: length $l = 8 \text{ m} \rightarrow 7.5 \leq l < 8.5$

breadth $b = 6 \text{ m} \rightarrow 5.5 \leq b < 6.5$

Upper bound of area = upper bound of 'l' × upper bound of 'b'

= $8.5 \times 6.5 = \underline{55.25 \text{ m}^2}$ ✓

8. The formula $s = \frac{1}{2}at^2$ is used to calculate the distance s travelled. When $a = 3$ and $t = 10$, each correct to the nearest integer, calculate the lower bound of the distance s . [W-19/43/Q15] --- [2]

Solution: $a = 3 \rightarrow 2.5 \leq a < 3.5$ and $t = 10 \rightarrow 9.5 \leq t < 10.5$

∴ lower bound s , consider the lower bound of a and t both.

∴ lower bound of $s = \frac{1}{2}(2.5)(9.5)^2 = \underline{112.8125 \text{ m}^2}$ ✓

9. $T = \frac{49.2 - 9.59}{4.085 \times 2.35}$, By writing each number correct to 1 significant figure, work out an estimate for T . [W-20/21/Q5] [2]

Solution: $T = \frac{49.2 - 9.59}{4.085 \times 2.35} = \frac{50 - 10}{4 \times 2}$
 $= \frac{40}{8} = 5 \checkmark$

10. A rectangle measures 8.5 cm by 10.7 cm, both correct to 1 decimal place. Calculate the upper bound of the perimeter of the rectangle. -- [3]

[W-20/41/Q4(a)]

Solution: $8.45 \leq l = 8.5 < 8.55$ and $10.65 \leq b = 10.7 < 10.75$

\therefore upper bound of the perimeter of Rectangle
 $= 2[\text{upper bound of } l + \text{upper bound of } b]$
 $= 2[8.55 + 10.75] = 2 \times 19.30 = 38.6 \text{ cm} \checkmark$

11. The length, l cm, of a line is 18.3 cm, correct to the nearest millimetre. Complete this statement about the value of l . -- [2]

$$\leq l <$$

[W-20/23/Q8]

Answer: $18.25 \leq l < 18.35 \checkmark$

1. At the temperature in Maseru was 21°C .
At mid night the temperature had fallen by 26°C . --- [1]
Workout the temperature at mid night. S-20/22/Q2

Solution: Temperature at mid night = $21^{\circ} - 26^{\circ} = -5^{\circ}\text{C}$ ✓

2. Write down, (a) a square number greater than 10. --- [1]
(b) an irrational number. S-20/22/Q4 -- [1]

Solution: (a) 16 (or 25, 36, -- maybe any sq no greater than 10)
(b) $\sqrt{2}$ (or $\sqrt{3}$ or any other rational number)

3. The lowest temperature recorded at Scott base in Antarctica is -57°C .
The highest temperature recorded at Scott base is 63.8°C more than this.
What is the highest temperature recorded at Scott Base? --- [1]
W-19/21/Q1

Solution: The highest temperature at Scott Base = $-57 + 63.8 = 6.8^{\circ}\text{C}$

4. Write down the temperature that 7°C below -3°C . --- [1]
W-19/23/Q1

Solution: Temperature 7°C below $-3^{\circ}\text{C} = -3 - 7 = -10^{\circ}\text{C}$

5. Here is a list of numbers: 87, 77, 57, 47, 27
From this list, write down:

- (a) a cube number --- [1]
(b) a prime number --- [1]

W-19/23/Q3

Solution (a) Cube number = 27 ✓
(b) Prime number = 47 ✓

6. Write down the cube number that is greater than 50 but less than 100.
W-20/23/Q1 --- [1]

Solution: 64 (or 4^3)

$$7. \quad N = 2^4 \times 3 \times 7^5$$

$PN = K$, where P is an integer and K is square number.
Find the smallest value of P .

[W-20/23 Q14] -- [2]

Solution:

$$N = 2^4 \times 3 \times 7^5$$

$$\text{Now } PN = 2^4 \times 3^2 \times 7^6 \rightarrow P = 3 \times 7 = \underline{21} \checkmark$$

Ratio and proportion

1. Kristian and Stephanie share some money the ratio 3:2
Kristian receives \$ 72. ---[2]
Work out how much Stephanie receives.

[SP-20/04/Q1(a)(i)]

Solution: Kristian: Stephanie = 3:2

$$\text{Kristian receives} = \$ 72 \Rightarrow \text{Stephanie receives} = \frac{72 \times 2}{3} = \$ 48 \checkmark$$

2. Dhenu plays with his model railway from 0650 to 1115.
He then rides his bicycle for 3 hours.
Find the ratio of the time playing with his model railway:
Time riding bicycle. Give your answer in its simplest form. ---[3]

[M-20/42/Q11]

Solution: Playing time = 1115 - 0650 = 4hr 25min = 265 min

$$\text{Riding time} = 3 \text{ hrs} = 180 \text{ min}$$

$$\text{Ratio} = 265 : 180$$

$$= \underline{53 : 36} \checkmark$$

$$\left(\because \frac{265}{180} = \frac{53}{36} \right)$$

3. Arjun and Gretel each pay rent.
In 2018, the ratio of the amount each paid in was, Arjun: Gretel = 5:7
In 2019, the ratio of the amount each paid in was, Arjun: Gretel = 9:13
Arjun paid the same amount of rent in both 2018 and 2019.
Gretel paid \$ 290 more rent in 2019 than she did in 2018.
Work out the amount Arjun paid in rent in 2019. ---[4]

[S-20/41/Q1(e)]

Solution: Let the rent paid by Arjun in 2019 (or in 2018) = \$ A

$$\text{In 2018 Gretel paid} = \frac{A \times 7}{5} = \$ \frac{7}{5} A$$

$$\text{In 2019 Gretel paid} = \frac{A \times 13}{9} = \$ \frac{13}{9} A$$

$$\text{Given } \frac{13}{9} A - \frac{7}{5} A = \$ 290$$

$$\frac{2}{45} A = 290$$

$$\Rightarrow A = \frac{290 \times 45}{2} = \$ 6525$$

4. Divide \$24 in the ratio 7:5

-- [2]

[S-20/42/Q1(a)(i)]

Solution: First part = $\frac{7}{12} \times 24 = \$14 \checkmark$

Second part = $\frac{5}{12} \times 24 = \$10 \checkmark$

5. The visitors to the campsite today are in the ratio:

men: women = 5:4 and women: children = 3:7

(i) Calculate the ratio; men: women: children in simplest ratio. -- [2]

(ii) Today there are 224 children at the campsite.

Calculate the total number of men and women.

-- [3]

[S-20/43/100]

Solution (i) men; women; children

$$\begin{array}{ccc} 5 & : & 4 & & \times 3 \\ & & 3 & : & 7 & \times 4 \end{array}$$

⇒ 15 : 12 : 28 ✓

(ii) children = 224

($\frac{15+12}{28} = 27$)

∴ men and women = $\frac{224 \times 27}{28} = 216 \checkmark$

6. Ali and Mo share a sum of money in the ratio Ali:Mo = 9:7

Ali receives \$600 more than Mo.

Calculate how much each receives.

-- [3]

[W-19/41/Q2(a)]

Solution: Ali: Mo = 9:7

Ali gets extra ⇒ $\frac{2}{9} \times \text{Ali} = 600$ ($9-7=2$)

⇒ Ali = $\frac{600 \times 9}{2} = \$2700 \checkmark$

∴ Mo receives = $\frac{2700 \times 7}{9} = \underline{\underline{\$2100 \checkmark}}$

7. (a) Mohsin has 600 pear trees and 720 apple trees on his farm.
- (i) Write the ratio pear trees : apple trees in its simplest form. -- [1]
- (ii) Each apple tree produces 16 boxes of apples each year.
One box contains 18 kg of apples.
Calculate the total mass of apples produced by 720 trees in one year. Give your answer in standard form. -- [3]
- (b) One week, the total mass of pears picked was, 18540 kg.
For this week, the ratio, mass of apples : mass of pears = 13 : 9
Find the mass of apples picked that week. -- [2]

Solution: (a) (i) pear tree : apple trees = $\frac{600}{720} = \frac{5}{6}$ ✓ (∵ $\frac{600}{720} = \frac{5}{6}$)

(ii) Total mass of apples = $16 \times 18 \times 720$
= $207360 \text{ kg} = 2.0736 \times 10^5 \text{ kg}$ ✓

(b) Apples : pears = 13 : 9
mass of pears = 18540 kg
∴ mass of apples = $\frac{18540 \times 13}{9} = 26780 \text{ kg}$ ✓

8. In a cycling club, the number of members are in the ratio males : female = 8 : 3 ; The club has 342 females.
Find the total number of members. -- [2]

Solution: male : female = 8 : 3
number of female = 342
∴ Total number of members = $\frac{342 \times 11}{3} = 1254$ ✓ (∵ $8+3=11$)

9. Rangan buys 3.6 kg of potatoes and 2.8 kg of leeks.
The total cost is \$13.72. Leeks cost \$2.65 per kg.
Find the cost of 1 kg of potatoes. -- [3]

Solution: Total cost = \$13.72.
Cost of 2.8 kg leeks = $2.8 \times 2.65 = \$7.42$
Hence cost of 3.6 kg of potatoes = $13.72 - 7.42 = \$6.3$
∴ Cost of 1 kg of potatoes = $\frac{6.3}{3.6} = \$1.75$ ✓

10(a) A plane has 14 First class, 70 Premium seats and 168 Economy seats. Find the ratio of First class seats: Premium seats: Economy seats. Give your answer in its simplest form. [W-20/4/02(a)(b)(1)] [2]

Solution (a) First class seats : Premium seat : Economy Seats

$$= 14 : 70 : 168 \quad (\text{Dividing each ratio by } 14)$$

$$= 1 : 5 : 12 \checkmark$$

(b)(i) For the morning flight, the cost of tickets are in the ratio
 First class: Premium: Economy = 14:6:5

The cost of a premium ticket is \$114, find the cost of a First class ticket and the cost of a Economy ticket.

Solution b(i) First class: Premium: Economy = 14:6:5

and cost of Premium = \$114

\therefore cost of First class = $\frac{114}{6} \times 14 = \$266 \checkmark$

and cost of Economy = $\frac{114}{6} \times 5 = \$95 \checkmark$

11. Alex and Chris share sweets in the ratio Alex:Chris = 7:3
 Alex receives 20 more sweets than Chris. --- [2]
 Work out the number of sweets Chris receives. [W-20/22/Q12]

Solution: Alex:Chris = 7:3 and Alex receives 20 more than Chris:

\therefore Chris receives = $\frac{20}{(7-3)} \times 3 = \frac{20 \times 3}{4} = 15 \checkmark$