UNIT 7

COMPARING QUANTITIES

(A) Main Concepts and Results

- To compare two quantities, their units must be the same.
- Two ratios can be compared by converting them into like fractions. If the two fractions are equal, we say that the two given ratios are equivalent.
- If two ratios are equivalent (or equal), then the involved four quantities are said to be in proportion.
- One of the ways of comparing quantities is percentage. Per cent is derived from Latin word 'per centum' meaning 'per hundred'.
- Percent is represented by the symbol % and means hundredth too.
- Fractions can be converted into percentages and vice-versa.
- Decimals can also be converted into percentages and vice-versa.
- The buying price of any item is known as its cost price. It is written in short as CP.
- The price at which an item is sold, is known as its selling price or in short SP.
- If CP < SP, then a profit is made and Profit = SP – CP.
- If CP = SP, there is no profit or loss.
- If CP > SP, then a loss is made and Loss = CP – SP.
- Profit per cent = $\frac{\text{Profit}}{\text{CP}} \times 100$
- Loss per cent = $\frac{\text{Loss}}{\text{CP}} \times 100$

- 'Principal' P, means the borrowed money.
- The extra money paid by borrower for using borrowed money for given time is called 'Interest' I.
- The period for which the money is borrowed is called 'Time Period' T.
- To determine Interest to be paid, we have 'Rate of Interest'.
- Rate of Interest is generally given in per cent per year.
- On a principal of ₹ P at R % rate of interest per year, the interest (simple) I paid for T years is given by $I = \frac{P \times R \times T}{100}$.
- The total money paid alongwith interest or principal P is called amount (A). Thus A = P + I.

(B) Solved Examples

In Examples 1 to 3, there are four options, out of which one is correct. Choose the correct one.

Example 1: The ratio of the heights 1.50 m and 75 cm of two persons can be written as

(a) 1 : 50 (b) 1 : 5 (c) 2 : 1 (d) 1 : 2

Solution: Correct answer is (c).

CROSS PRODUCTS

Cross products in proportions are equal. If the ratios are not in proportion, the cross products are not equal.

Proportions		Not Proportions	
$\frac{6}{8} = \frac{9}{12}$	$\frac{5}{2} = \frac{15}{6}$	$\frac{1}{6} \neq \frac{2}{7}$	$\frac{5}{12} \neq \frac{2}{5}$
$6 \cdot 12 = 8 \cdot 9$	$5 \cdot 6 = 2 \cdot 15$	$1 \cdot 7 \neq 6 \cdot 2$	$5 \cdot 5 \neq 12 \cdot 2$
$72 = 72$	$30 = 30$	$7 \neq 12$	$25 \neq 24$

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Example 2: Out of 50 children in a class, 20 are boys. Then the percentage of girls is

(a) 60 (b) 30 (c) 50 (d) $66\frac{2}{3}$

Solution: Correct answer is (a).

Example 3: The interest on ₹ 5000 at the rate of 15% per annum for one month is

(a) ₹ 750 (b) ₹ 75 (c) ₹ 625 (d) ₹ 62.50

Solution: Correct answer is (d).

In Examples 4 and 5, fill in the blanks to make the statements true.

Example 4: If two ratios are equivalent, then the four quantities are said to be in _____.

Solution: Proportion

Example 5: 40% of 250 km is _____.

Solution: 100 km.

Think and Discuss

1. **Describe** how two ratios can form a proportion.
2. **Give** three ratios equivalent to 12 : 24.
3. **Explain** why the ratios 2 : 4 and 6 :10 do not form a proportion.
4. **Give an example** of two ratios that are proportional and have numerators with different signs.

In Examples 6 and 7, state whether the statements are True or False.

Example 6: If 25% of a journey is 800 km, the total distance of the journey is 3000 km.

Solution: False

Example 7: 0.05 is equivalent to 5%.

Solution: True

Example 8: Suhana sells a sofa set for ₹ 9600 making a profit of 20%. What is the C.P. of the sofa set?

Solution: Let the CP be ₹ 100

Profit (20%) = ₹ 20

Therefore, SP = ₹ (100 + 20) = ₹ 120

If SP is ₹ 120, CP = ₹ 100

If SP is ₹ 9600, CP = $\frac{100}{120} \times 960$

= ₹ 8000

An alternate method to solve the same example is:

Profit = 20% of CP SP = CP + Profit

So, 9600 = CP + 20% of CP

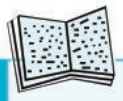
$= CP + \frac{20}{100} \times CP$

$= \left(1+\frac{1}{5}\right) CP$

$= \frac{6}{5} CP$

Therefore, $9600 \times \frac{5}{6} = CP$

or CP = ₹ 8000



Vocabulary

1. The word cross can mean "to intersect," forming an "X" shape. Since a product is the result of multiplying, what do you suppose you multiply to find the **cross products** of two fractions?
2. The word indirect means "not direct". What do you think it means to find the length of something using **indirect measurement** ?
3. A **ratio** compares two quantities using a particular operation. Knowing what you do about rational numbers, which operation do you think you use in a ratio?

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Example 9: John borrowed ₹ 75000 from his friend and after one year returned ₹ 80000 to his friend. Find the interest.

Solution: Principal = ₹ 75000

Amount = ₹ 80000

Interest = Amount – Principal

= ₹ 80000 – ₹ 75000

= ₹ 5000

Per cent	Decimal	Fraction
5%	0.05	$\frac{1}{20}$
10%	0.1	$\frac{1}{10}$
25%	0.25	$\frac{1}{4}$
33.3%	0.3	$\frac{1}{3}$

Example 10: If Meenakshee pays an interest of ₹ 1500 for 4 years on a sum of ₹ 2500, find the rate of interest per annum(p.a.)

Solution: P = ₹ 2500, T = 4 years, I = ₹ 1500

R = ?

Now, $I = \frac{P \times R \times T}{100}$

Therefore, $1500 = \frac{2500 \times R \times 4}{100}$

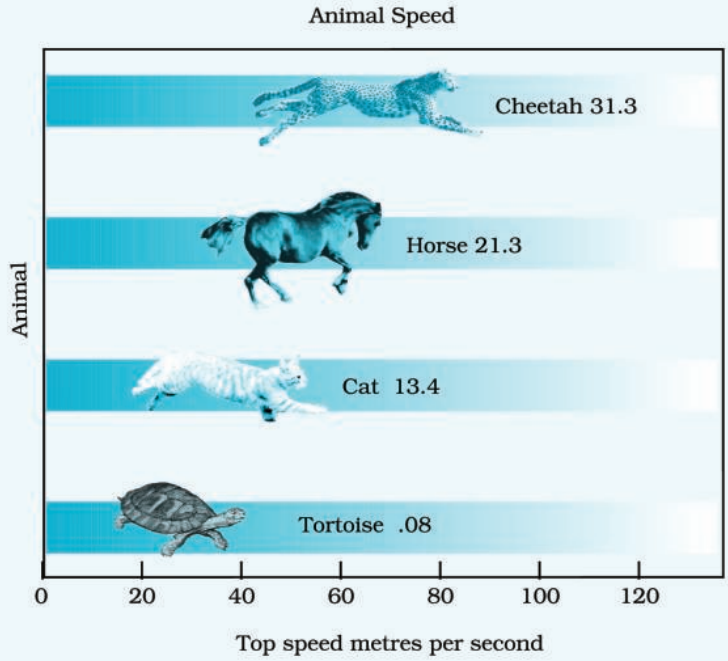
$R = \frac{1500 \times 100}{2500 \times 4} = 15$

So, the rate of interest is 15%.

Application on Problem Solving Strategy

Example 11

Refer to the graphic. If a cheetah and tortoise travel at their top speeds for 1minute; how much farther does the cheetah travel?



Solution: **Understand and Explore the Problem**

- **What do you know?**

  We know the top speeds for a Cheetah and a Tortoise in m/sec.

- **What are you trying to find?**

  We need to find the difference in the distances travelled by Cheetah and the tortoise in 1 minute.

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Plan a Strategy

- Begin by determining the distance travelled by each animal in 1 minute.
- 1 min = 60 seconds.
- Multiply each top speed (m/s) by 60.
- Subtract to find the difference of the distances travelled by two animals.

Solve

- 31.3 × 60 = 1878 m (Distance Cheetah travels in 1 minute)
- .08 × 60 = 4.8 m (Distance tortoise travels in 1 minute)
- 1878m – 4.8 m = 1873.2 m (Distance travelled by Cheetah farther than tortoise in one minute).

Revise

- **Working backward**

Speed of Cheetah = $\frac{D}{T} = \frac{1878m}{60s} = 31.3\ m/s$

Speed of Tortoise = $\frac{D}{T} = \frac{4.8m}{60s} = 0.08\,m/s$

Hence, our answer is correct.

Think and Discuss

1. Find the ratio of speeds Cheetah and Tortoise in m/s with the given data.
2. Discuss with your friends to estimate the top speeds of other animals and verify it by searching the available data in other books.

(C) Exercise

In questions 1 to 23, there are four options, out of which one is correct. write the correct one.

1. 20% of 700 m is

(a) 560 m (b) 70 m (c) 210 m (d) 140 m

2. Gayatri's income is ₹ 1,60,000 per year. She pays 15% of this as house rent and 10% of the remainder on her child's education. The money left with her is

(a) ₹136000 (b) ₹120000 (c) ₹122400 (d) ₹14000

3. The ratio of Fatima's income to her savings is 4 : 1. The percentage of money saved by her is :

(a) 20% (b) 25% (c) 40% (d) 80%

4. 0.07 is equal to

(a) 70% (b) 7% (c) 0.7% (d) 0.07%

5. In a scout camp, 40% of the scouts were from Gujarat State and 20% of these were from Ahmedabad. The percentage of scouts in the camp from Ahmedabad is:

(a) 25 (b) 32.5 (c) 8 (d) 50

6. What percent of ₹ 4500 is ₹ 9000?

(a) 200 (b) $\frac{1}{2}$ (c) 2 (d) 50

Ratio	Decimal	Per cent
$\frac{3}{10}=\frac{30}{100}$	0.30	30 %
$\frac{1}{2}=\frac{50}{100}$	0.50	50 %
$\frac{3}{4}=\frac{75}{100}$	0.75	75 %

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7. 5.2 is equal to

(a) 52% (b) 5.2% (c) 520% (d) 0.52%

Think and Discuss

1. **Determine** the ratios that are nearly equivalent to each of the following per cents : 23%, 53%, 65%, 12% and 76%.
2. **Describe** how to find 35% of a number when you know 10% of the number.

8. The ratio 3 : 8 is equal to

(a) 3.75% (b) 37.5% (c) 0.375% (d) 267%

9. 225% is equal to

(a) 9 : 4 (b) 4 : 9 (c) 3 : 2 (d) 2 : 3

10. A bicycle is purchased for ₹ 1800 and is sold at a profit of 12%. Its selling price is

(a) ₹ 1584 (b) ₹ 2016 (c) ₹ 1788 (d) ₹ 1812

11. A cricket bat was purchased for ₹ 800 and was sold for ₹ 1600. Then profit earned is

(a) 100% (b) 64% (c) 50% (d) 60%

12. A farmer bought a buffalo for ₹ 44000 and a cow for ₹ 18000. He sold the buffalo at a loss of 5% but made a profit of 10% on the cow. The net result of the transaction is

(a) loss of ₹ 200 (b) profit of ₹ 400

(c) loss of ₹ 400 (d) profit of ₹ 200

13. If Mohan's income is 25% more than Raman's income, then Raman's income is less than Mohan's income by

(a) 25% (b) 80% (c) 20% (d) 75%

14. The interest on ₹ 30000 for 3 years at the rate of 15% per annum is

(a) ₹ 4500 (b) ₹ 9000 (c) ₹ 18000 (d) ₹ 13500

15. Amount received on ₹ 3000 for 2 years at the rate of 11% per annum is

(a) ₹ 2340 (b) ₹ 3660

(c) ₹ 4320 (d) ₹ 3330

16. Interest on ₹ 12000 for 1 month at the rate of 10 % per annum is

(a) ₹ 1200 (b) ₹ 600

(c) ₹ 100 (d) ₹ 12100

17. Rajni and Mohini deposited ₹ 3000 and ₹ 4000 in a company at the rate of 10% per annum for 3 years and $2\frac{1}{2}$ years respectively. The difference of the amounts received by them will be

(a) ₹ 100 (b) ₹ 1000

(c) ₹ 900 (d) ₹ 1100

18. If 90% of x is 315 km, then the value of x is

(a) 325 km (b) 350 km

(c) 405 km (d) 340 km

Mental Math

You may find it helpful to equivalent per cents, decimals and fractions

$12\frac{1}{2}\% = 0.125 = \frac{1}{8}$

$20\% = 0.2 = \frac{1}{5}$

$25\% = 0.25 = \frac{1}{4}$

$33\frac{1}{3}\% \approx 0.33 = \frac{1}{3}$

$40\% = 0.4 = \frac{2}{5}$

$50\% = 0.5 = \frac{1}{2}$

$60\% = 0.6 = \frac{3}{5}$

$80\% = 0.8 = \frac{4}{5}$

19. On selling an article for ₹ 329, a dealer lost 6%. The cost price of the article is

(a) ₹ 310.37 (b) ₹ 348.74 (c) ₹ 335 (d) ₹ 350

20. $\frac{25\% \text{ of } 50\% \text{ of } 100\%}{25 \times 50}$ is equal to

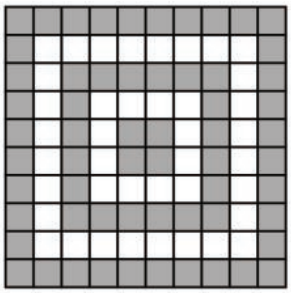
(a) 1.1% (b) 0.1% (c) 0.01% (d) 1%

21. The sum which will earn a simple interest of ₹ 126 in 2 years at 14% per annum is

(a) ₹ 394 (b) ₹ 395 (c) ₹ 450 (d) ₹ 540

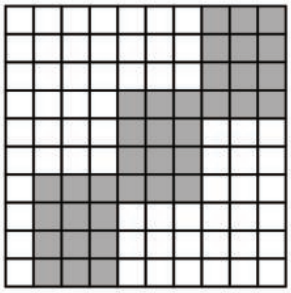
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22. The per cent that represents the unshaded region in the figure.



(a) 75% (b) 50% (c) 40% (d) 60%

23. The per cent that represents the shaded region in the figure is



(a) 36% (b) 64% (c) 27% (d) 48%

In each of the questions 24 to 59, fill in the blanks to make the statements true.

24. 2 : 3 = _____ %

Per cent Problem	Equation	Proportion
Finding the per cent of a number	15% of 120 = n	$\frac{15}{100}=\frac{n}{120}$
Finding the per cent of one number with another number	p % of 120 = 18	$\frac{p}{100}=\frac{18}{120}$
Finding a number when the per cent is known	15% of n = 18	$\frac{15}{100}=\frac{18}{n}$

25. $18\frac{3}{4}\%$ = _____ : _____

26. 30% of ₹ 360 = _____.

27. 120 % of 50 km = _____.

28. 2.5 = _____%

29. $\frac{8}{5}$ = _____ %

30. A _____ with its denominator 100 is called a per cent.

31. 15 kg is _____ % of 50 kg.

32. Weight of Nikhil increased from 60 kg to 66 kg. Then, the increase in weight is _____ %.

Check Understanding

50% of a number is half of that number.
100% of a number is that number.
200% of a number is twice that number.
What is 200% of 5?
What is 300% of 5?

33. In a class of 50 students, 8 % were absent on one day. The number of students present on that day was _____.

34. Savitri obtained 440 marks out of 500 in an examination. She secured _____ % marks in the examination.

35. Out of a total deposit of ₹ 1500 in her bank account, Abida withdrew 40% of the deposit. Now the balance in her account is _____.

36. _____ is 50% more than 60.

37. John sells a bat for ₹ 75 and suffers a loss of ₹ 8. The cost price of the bat is _____.

38. If the price of sugar is decreased by 20%, then the new price of 3kg sugar originally costing ₹ 120 will be _____.

39. Mohini bought a cow for ₹ 9000 and sold it at a loss of ₹ 900. The selling price of the cow is _____.

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40. Devangi buys a chair for ₹ 700 and sells it for ₹ 750. She earns a profit of _____ % in the transaction.

41. Sonal bought a bed sheet for ₹ 400 and sold it for ₹ 440. Her _____% is _____.

42. Nasim bought a pen for ₹ 60 and sold it for ₹ 54. His _____% is _____.

43. Aahuti purchased a house for ₹ 50,59,700 and spent ₹ 40300 on its repairs. To make a profit of 5%, she should sell the house for ₹ _____.

44. If 20 lemons are bought for ₹ 10 and sold at 5 for three rupees, then _____ in the transaction is _____%.

45. Narain bought 120 oranges at ₹ 4 each. He sold 60 % of the oranges at ₹ 5 each and the remaining at ₹ 3.50 each. His _____ is _____%.

46. A fruit seller purchased 20 kg of apples at ₹ 50 per kg. Out of these, 5% of the apples were found to be rotten. If he sells the remaining apples at ₹ 60 per kg, then his _____is _____%.

47. Interest on ₹ 3000 at 10% per annum for a period of 3 years is _____.

48. Amount obtained by depositing ₹ 20,000 at 8 % per annum for six months is _____.

49. Interest on ₹ 12500 at 18% per annum for a period of 2 years and 4 months is _____.

50. 25 ml is _____ per cent of 5 litres.

51. If A is increased by 20%, it equals B. If B is decreased by 50%, it equals C. Then _____ % of A is equal to C.

Think and Discuss

1. **Explain** whether a 150% increase or a 150% decrease is possible.
2. **Compare** finding a 20% increase for finding 120% of a number.

52. Interest = $\frac{P \times R \times T}{100}$, where

T is _____

R% is _____ and

P is _____.

53. The difference of interest for 2 years and 3 years on a sum of ₹ 2100 at 8% per annum is _____.

54. To convert a fraction into a per cent, we _____ it by 100.

55. To convert a decimal into a per cent, we shift the decimal point two places to the _____.

56. The _____ of interest on a sum of ₹ 2000 at the rate of 6% per annum for $1\frac{1}{2}$ years and 2 years is ₹ 420.

57. When converted into percentage, the value of 6.5 is _____ than 100%.

Think and Discuss

1. **Give an example** of a real-world situation in which you would use (1) decimals (2) fractions and (3) per cents.
2. **Show** ₹ 25 as a part of a 100 rupee note in terms of (1) a reduced fraction (2) a per cent and (3) a decimal. Which is most common?
3. **Explain** how you can find a fraction, decimal, or per cent when you have only one form of a number.

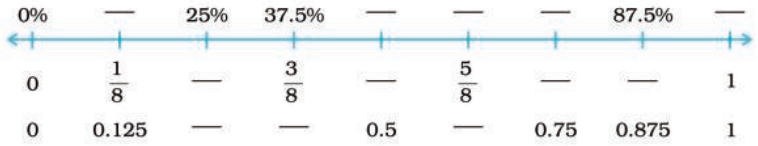
In questions 58 and 59, copy each number line. Fill in the blanks so that each mark on the number line is labelled with a per cent, a fraction and a decimal. Write all fractions in lowest terms.

58.

0%	—	20%	30%	—	50%	—	—	80%	—	100%
0	$\frac{1}{10}$	—	$\frac{3}{10}$	—	—	$\frac{3}{5}$	—	—	$\frac{9}{10}$	1
0	0.1	0.2	—	0.4	—	—	0.7	—	—	1

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59.



Look in any magazine or newspaper and you're likely to see numbers written as per cents. Listen to any sporting event, and you'll probably hear statistics reported using per cents. Per cents are everywhere. But what are per cents? The word per cent means for each 100, so a per cent like 50% is the same amount as the fraction $\frac{50}{100}$ (or $\frac{1}{2}$) or the decimal 0.50 (or 0.5). Fractions, decimals, and per cents can be used interchangeably to represent parts of a whole quantity.

Often, the word percent is used in connection with the per cent of some quantity. For example, you might hear, "Only 3% of voters voted in the last election." No matter what the quantity, 100% of a quantity always means all of it, and 50% always means half of it. The amount indicated by a certain per cent changes as the size of the quantity changes. For example, 50% of 10 dogs is 5 dogs, but 50% of 100 dogs is 50 dogs.

In questions 60 to 79, state whether the statements are True or False.

60. $\frac{2}{3} = 66\frac{2}{3}\%$.

61. When an improper fraction is converted into percentage then the answer can also be less than 100.

62. 8 hours is 50% of 4 days.

63. The interest on ₹ 350 at 5% per annum for 73 days is ₹ 35.

64. The simple interest on a sum of ₹ P for T years at R% per annum is given by the formula: Simple Interest = $\frac{T \times P \times R}{100}$.

65. $75\% = \frac{4}{3}$.

66. 12% of 120 is 100.

67. If Ankita obtains 336 marks out of 600, then percentage of marks obtained by her is 33.6.

68. 0.018 is equivalent to 8%.

69. 50% of ₹ 50 is ₹ 25.

70. 250 cm is 4% of 1 km.

Build Understanding

You can use an equation to find the 'percent of a number', 'find what per cent one number is of another', and 'find a number when a per cent of it is known'. Translate the phrase into an equation. Then solve for the unknown. "Is" means equal. "Of" means multiply.

71. Out of 600 students of a school, 126 go for a picnic. The percentage of students that did not go for the picnic is 75.

72. By selling a book for ₹ 50, a shopkeeper suffers a loss of 10%. The cost price of the book is ₹ 60.

73. If a chair is bought for ₹ 2000 and is sold at a gain of 10%, then selling price of the chair is ₹ 2010.

74. If a bicycle was bought for ₹ 650 and sold for ₹ 585, then the percentage of profit is 10.

75. Sushma sold her watch for ₹ 3320 at a gain of ₹ 320. For earning a gain of 10% she should have sold the watch for ₹ 3300.

76. Interest on ₹ 1200 for $1\frac{1}{2}$ years at the rate of 15% per annum is ₹ 180.

77. Amount received after depositing ₹ 800 for a period of 3 years at the rate of 12% per annum is ₹ 896.

78. ₹ 6400 were lent to Feroz and Rashmi at 15% per annum for $3\frac{1}{2}$ and 5 years respectively. The difference in the interest paid by them is ₹ 150.

79. A vendor purchased 720 lemons at ₹ 120 per hundred.10% of the lemons were found rotten which he sold at ₹ 50 per hundred. If he sells the remaining lemons at ₹ 125 per hundred, then his profit will be 16%.

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80. Find the value of x if

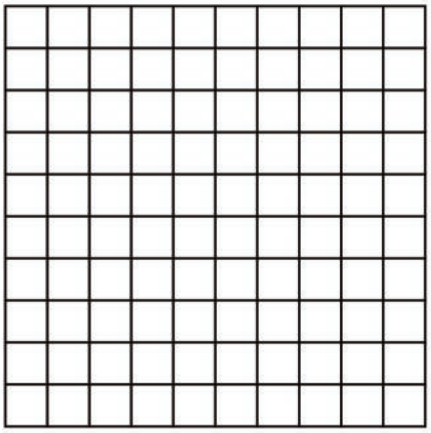
(i) 8% of ₹ x is ₹ 100

(ii) 32% of x kg is 400 kg

(iii) 35% of ₹ x is ₹ 280

(v) 45% of marks x is 405.

81. Imagine that a 10 × 10 grid has value 300 and that this value is divided evenly among the small squares. In other words, each small square is worth 3. Use a new grid for each part of this problem, and label each grid "Value : 300."



(a) Shade 25% of the grid. What is 25% of 300? Compare the two answers.

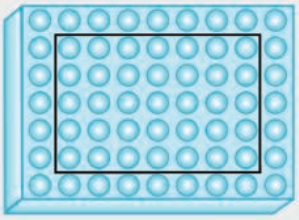
(b) What is the value of 25 squares?

(c) Shade 17% of the grid. What is 17% of 300? Compare the two answers.

(d) What is the value of $\frac{1}{10}$ of the grid?

82. Express $\frac{1}{6}$ as a per cent.

The figure shown is a geoboard with a rectangle outlined using a rubberband.



1. What is the area of the rectangle?
2. Draw a similar figure whose area is 50% larger than this figure.
3. Draw a similar figure whose area is 25% larger than this figure.
4. Suppose that the figure shown is 75% of another figure, what would the other figure look like?

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83. Express $\frac{9}{40}$ as a per cent.

84. Express $\frac{1}{100}$ as a per cent.

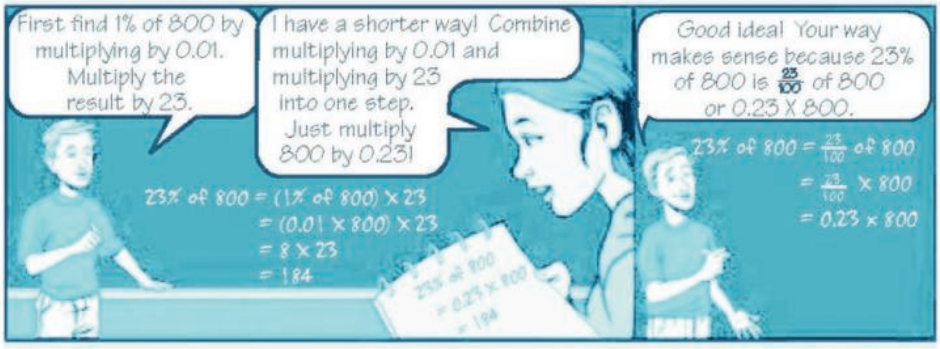
85. Express 80% as fraction in its lowest term.

86. Express $33\frac{1}{3}\%$ as a ratio in the lowest term.

87. Express $16\frac{2}{3}\%$ as a ratio in the lowest form.

88. Express 150% as a ratio in the lowest form.

89. Sachin and Sanjana are calculating 23% of 800.



Now calculate 52% of 700 using both the ways described above. Which way do you find easier?

Revise

- Is your answer reasonable?

  After you solve a word problem, ask yourself if your answer makes sense. You can round the numbers in the problem and estimate to find a reasonable answer. It may also help to write your answer in sentence form.

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90. Write 0.089 as a per cent.

91. Write 1.56 as a per cent.

92. What is 15% of 20?

93. What is 800% of 800?

94. What is 100% of 500?

95. What per cent of 1 hour is 30 minutes?

96. What per cent of 1 day is 1 minute?

97. What per cent of 1 km is 1000 metres?

98. Find out 8% of 25 kg.

99. What percent of ₹ 80 is ₹ 100?

100. 45% of the population of a town are men and 40% are women. What is the percentage of children?

101. The strength of a school is 2000. If 40 % of the students are girls then how many boys are there in the school?

102. Chalk contains 10% calcium, 3% carbon and 12% oxygen. Find the amount of carbon and calcium (in grams) in $2\frac{1}{2}$ kg of chalk.

103. 800 kg of mortar consists of 55% sand, 33% cement and rest lime. What is the mass of lime in mortar?

104. In a furniture shop, 24 tables were bought at the rate of ₹ 450 per table. The shopkeeper sold 16 of them at the rate of ₹ 600 per table and the remaining at the rate of 400 per table. Find her gain or loss percent.

105. Medha deposited 20% of her money in a bank. After spending 20% of the remainder, she has ₹ 4800 left with her. How much did she originally have?

106. The cost of a flower vase got increased by 12%. If the current cost is ₹ 896, what was its original cost?

107. Radhika borrowed ₹ 12000 from her friends. Out of which ₹ 4000 were borrowed at 18% and the remaining at 15% rate of interest per annum. What is the total interest after 3 years?

Think and Discuss

1. **Show** why 5% of a number is less than $\frac{1}{10}$ of the number.
2. **Demonstrate** two ways to find 70% of a number.
3. **Name** fractions in simplest form that are the same as 40% and as 250%.

108. A man travelled 60 km by car and 240 km by train. Find what per cent of total journey did he travel by car and what per cent by train?

109. By selling a chair for ₹ 1440, a shopkeeper loses 10%. At what price did he buy it?

110. Dhruvika invested money for a period from May 2006 to April 2008 at rate of 12% per annum. If interest received by her is ₹ 1620, find the money invested.

111. A person wanted to sell a scooter at a loss of 25%. But at the last moment he changed his mind and sold the scooter at a loss of 20%. If the difference in the two SP's is ₹ 4000, then find the CP of the scooter.

112. The population of a village is 8000. Out of these, 80% are literate and of these literate people, 40% are women. Find the ratio of the number of literate women to the total population.

113. In an entertainment programme, 250 tickets of ₹ 400 and 500 tickets of ₹ 100 were sold. If the entertainment tax is 40% on ticket of ₹ 400 and 20% on ticket of ₹ 100, find how much entertainment tax was collected from the programme.

114. Bhavya earns ₹ 50,000 per month and spends 80% of it. Due to pay revision, her monthly income increases by 20% but due to price rise, she has to spend 20% more. Find her new savings.

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115. In an examination, there are three papers each of 100 marks. A candidate obtained 53 marks in the first and 75 marks in the second paper. How many marks must the candidate obtain in the third paper to get an overall of 70 per cent marks?

116. Health Application

A doctor reports blood pressure in millimetres of mercury (mm Hg) as a ratio of systolic blood pressure to diastolic blood pressure (such as 140 over 80). Systolic pressure is measured when the heart beats, and diastolic pressure is measured when it rests. Refer to the table of blood pressure ranges for adults.

Blood Pressure Ranges			
	Normal	**Prehypertension**	**Hypertension (Very High)**
Systolic	Under 120 mm Hg	120-139 mm Hg	140 mm Hg and above
Diastolic	Under 80 mm Hg	80-89 mm Hg	90 mm Hg and above

Manohar is a healthy 37 years old man whose blood pressure is in the normal category.

(a) Calculate an approximate ratio of systolic to diastolic blood pressures in the normal range.

(b) If Manohar's systolic blood pressure is 102 mm Hg, use the ratio from part (a) to predict his diastolic blood pressure.

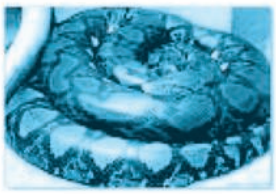
(c) Calculate ratio of average systolic to average diastolic blood pressure in the prehypertension category.

Think and Discuss

1. **Compare** finding a number when a per cent of the number is known to finding the per cent of one number with that of another number.
2. **Explain** whether a number is greater than or less than 36, if 22 per cent of the number is 36.

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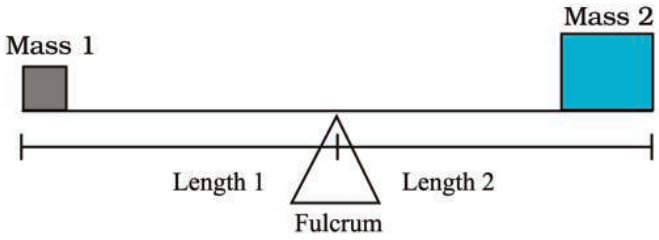
117. (a) Science Application: The king cobra can reach a length of 558 cm. This is only about 60 per cent of the length of the largest reticulated python. Find the length of the largest reticulated python.



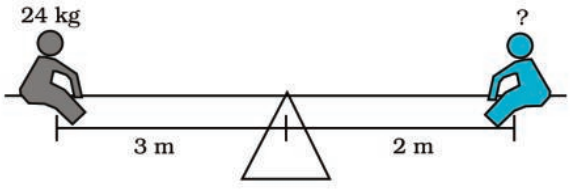
(b) Physical Science Application: Unequal masses will not balance on a fulcrum if they are at equal distance from it; one side will go up and the other side will go down.

Unequal masses will balance when the following proportion is true:

$$\frac{\text{mass1}}{\text{length2}} = \frac{\text{mass2}}{\text{length1}}$$



Two children can be balanced on a seesaw when $\frac{\text{mass1}}{\text{length2}} = \frac{\text{mass2}}{\text{length1}}$. The child on the left and child on the right are balanced. What is the mass of the child on the right?



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(c) Life Science Application



A DNA model was built using the scale 2 cm : 0.0000001 mm. If the model of the DNA chain is 17 cm long, what is the length of the actual chain?

Check Understanding

Often the time period is not given in years. Write each time period in terms of years.

3 months = _____ year.

4 months = _____ year.

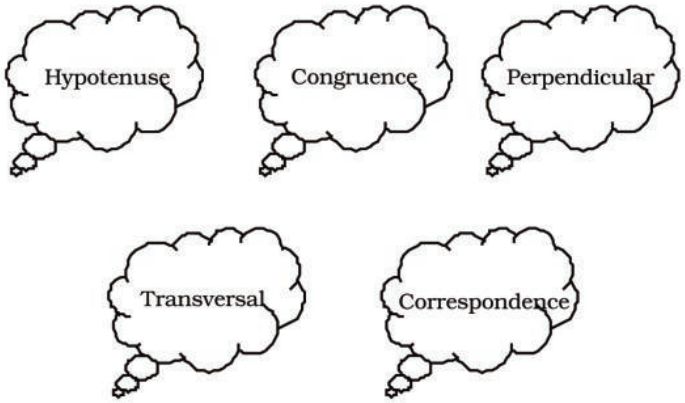
9 months = _____ year.

28 months = _____ years.

42 months = _____ years.

118. Language Application

Given below are few Mathematical terms.



Find

(a) The ratio of consonants to vowels in each of the terms.

(b) The percentage of consonants in each of the terms.

119. **What's the Error**? An analysis showed that 0.06 per cent of the T-shirts made by one company were defective. A student says this is 6 out of every 100. What is the student's error?

120. **What's the Error**? A student said that the ratios $\frac{3}{4}$ and $\frac{9}{16}$ were proportional. What error did the student make?

121. **What's the Error**? A clothing store charges ₹ 1024 for 4 T-shirts. A student says that the unit price is ₹ 25.6 per T-shirt. What is the error? What is the correct unit price?

122. A tea merchant blends two varieties of tea in the ratio of 5 : 4. The cost of first variety is ₹ 200 per kg and that of second variety is ₹ 300 per kg. If he sells the blended tea at the rate of ₹ 275 per kg, find out the percentage of her profit or loss.

123. A piece of cloth 5 m long shrinks 10 per cent on washing. How long will the cloth be after washing?

124. Nancy obtained 426 marks out of 600 and the marks obtained by Rohit are 560 out of 800. Whose performance is better?

125. A memorial trust donates ₹ 5,00,000 to a school, the interest on which is to be used for awarding 3 scholarships to students obtaining first three positions in the school examination every year. If the donation earns an interest of 12 per cent per annum and the values of the second and third scholarships are ₹ 20,000 and ₹ 15,000 respectively, find out the value of the first scholarship.

Build Understanding

Many sales men work on commission. This means they earn an amount of money that is a per cent of their total sales. The per cent is the commission rate. The amount of money they receive is the commission. Often, their income is a combination of salary (base pay) plus commission.

You can use either a proportion or an equation to solve problems involving commission.

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126. Ambika got 99 per cent marks in Mathematics, 76 per cent marks in Hindi, 61 per cent in English, 84 per cent in Science, and 95% in Social Science. If each subject carries 100 marks, then find the percentage of marks obtained by Ambika in the aggregate of all the subjects.

127. What sum of money lent out at 16 per cent per annum simple interest would produce ₹ 9600 as interest in 2 years?

Think and Discuss

1. **Explain** the meaning of each variable in the interest formula.
2. **Tell** what value should be used for t when referring to 6 months.
3. **Name** the different variables in the simple interest formula.
4. **Demonstrate** that doubling the time while halving the interest rate results in the same amount of simple interest.

128. Harish bought a gas-*chullah* for ₹ 900 and later sold it to Archana at a profit of 5 per cent. Archana used it for a period of two years and later sold it to Babita at a loss of 20 per cent. For how much did Babita get it?

129. Match each of the entries in Column I with the appropriate entries in Column II:

	Column I		**Column II**
(i)	3:5	(A)	₹ 54
(ii)	2.5	(B)	₹ 47
(iii)	100%	(C)	₹ 53
(iv)	$\frac{2}{3}$	(D)	₹ 160
(v)	$6\frac{1}{4}\%$	(E)	60 %
(vi)	12.5 %	(F)	25 %
(vii)	SP when CP = ₹ 50 and loss = 6 %	(G)	$\frac{1}{16}$
(viii)	SP when CP = ₹ 50 and profit = ₹ 4	(H)	250 %
(ix)	Profit% when CP = ₹ 40 and SP = ₹ 50	(I)	₹ 159

(x)	Profit% when CP = ₹ 50 and SP = ₹ 60	(J)	$66\frac{2}{3}\%$
(xi)	Interest when principal = ₹ 800, Rate of interest = 10% per annum and period = 2 years	(K)	20 %
(xii)	Amount when principal = ₹ 150, Rate of interest = 6% per annum and period = 1 year	(L)	0. 125
		(M)	3 : 2
		(N)	₹ 164
		(O)	3 : 3

130. In a debate competition, the judges decide that 20 per cent of the total marks would be given for accent and presentation. 60 per cent of the rest are reserved for the subject matter and the rest are for rebuttal. If this means 8 marks for rebuttal, then find the total marks.

Build Understanding

The **per cent of increase** tells what per cent the amount of increase is of the original number.

To find the per cent of increase, express a ratio of the amount of increase to the original number as a per cent.

$$\text{Per cent of increase} = \frac{amount\ of\ increase}{original\ number} \times 100$$

131. Divide ₹ 10000 in two parts so that the simple interest on the first part for 4 years at 12 per cent per annum may be equal to the simple interest on the second part for 4.5 years at 16 per cent per annum.

132. ₹ 9000 becomes ₹ 18000 at simple interest in 8 years. Find the rate per cent per annum.

133. In how many years will the simple interest on a certain sum be 4.05 times the principal at 13.5 per cent per annum?

134. The simple interest on a certain sum for 8 years at 12 per cent per annum is ₹ 3120 more than the simple interest on the same sum for 5 years at 14 per cent per annum. Find the sum.

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Make a Plan

- **Do you need an estimate or an exact answer?**

  When you are solving a word problem, ask yourself whether you need an exact answer or whether an estimate is sufficient. For example, if the amounts given in the problem are approximate, only an approximate answer can be given. If an estimate is sufficient, you may wish to use estimation techniques to save time in your calculations.

135. The simple interest on a certain sum for 2.5 years at 12 per cent per annum is ₹ 300 less than the simple interest on the same sum for 4.5 years at 8 per cent per annum. Find the sum.

136. Designing a Healthy Diet

When you design your healthy diet, you want to make sure that you meet the dietary requirements to help you grow into a healthy adult. As you plan your menu, follow the following guidelines

1. Calculate your ideal weight as per your height from the table given at the end of this question.
2. An active child should eat around 55.11 calories for each kilogram desired weight.
3. 55 per cent of calories should come from carbohydrates. There are 4 calories in each gram of carbohydrates.
4. 15 per cent of your calories should come from proteins. There are 4 calories in each gram of proteins.
5. 30 per cent of your calories may come from fats. There are 9 calories in each gram of fat.

Following is an example to design your own healthy diet.

Example

1. Ideal weight = 40 kg.
2. The number of calories needed = 40 × 55.11 = 2204.4
3. Calories that should come from carbohydrates
   = 2204.4 × 0.55 = 1212.42 calories.

Therefore, required quantity of carbohydrates

$$= \frac{1212.42}{4} = 303.105\text{g} = 300 \text{ g. (approx).}$$

4. Calories that should come from proteins

$$= 2204.4 \times 0.15 = 330.66 \text{ calories.}$$

Therefore, required quantity of protein

$$= \frac{330.66}{4} \text{ g} = 82.66 \text{ g.}$$

5. Calories that may come from fat = 2204.4×0.3
$= 661.3$ calories.

Therefore, required quantity of fat

$$= \frac{661.3}{9} \text{g} = 73.47 \text{ g.}$$

Answer the Given Questions

1. Your ideal desired weight is _____ kg.
2. The quantity of calories you need to eat is _____.
3. The quantity of protein needed is _____ g.
4. The quantity of fat required is _____ g.
5. The quantity of carbohydrates required is _____ g.

Think and Discuss

1. **Tell** how finding commission is similar to finding sales tax.
2. **Explain** whether adding 6 per cent sales tax to a total gives the same result as finding 106 per cent of the total or not.
3. **Explain** how to find the price of an item if you know the total cost after 5 per cent sales tax.
4. **Explain** whether the sales tax on a ₹ 200 item would be double the sales tax on a ₹ 100 item. Justify your answer.

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Ideal Height and Weight Proportion					
Men			Women		
Height		Weight	Height		Weight
Feet	cm	Kilograms	Feet	cm	Kilograms
5'	152	48	4'7"	140	34
5'1"	155	51	4'8"	142	36
5'2"	157	54	4'9"	145	39
5'3"	160	56	4'1"	147	41
5'4"	163	59	4'11"	150	43
5'5"	165	62	5'	152	45
5'6"	168	65	5'1"	155	48
5'7"	170	67	5'2"	157	50
5'8"	173	70	5'3"	160	52
5'9"	175	73	5'4"	163	55
5'10"	178	75	5'5"	165	57
5'11"	180	78	5'6"	168	59
6'	183	81	5'7"	170	61
6'1"	185	84	5'8"	173	64
6'2"	188	86	5'9"	175	66
6'3"	191	89	5'10"	178	68
6'4"	193	92	5'11"	180	70



Vocabulary

1. The word principal means "first". What do you suppose **principal** means when referring to interest?
2. The word **commission** has the Latin prefix com-, which means "with," and the Latin root mis, which means "send." What do you think these Latin parts mean together when referring to money?
3. The word per cent contains the root word cent, which means "one hundred." What do you think a **per cent** is?

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137. 150 students are studying English, Maths or both. 62 per cent of students study English and 68 per cent are studying Maths. How many students are studying both?

138. **Earth Science:** The table lists the world's 10 largest deserts.

Largest Deserts in the World	
Desert	**Area (km^2)**
Sahara (Africa)	8,800,000
Gobi (Asia)	1,300,000
Australian Desert (Australia)	1,250,000
Arabian Desert (Asia)	850,000
Kalahari Desert (Africa)	580,000
Chihuahuan Desert (North America)	370,000
Takla Makan Desert (Asia)	320,000
Kara Kum (Asia)	310,000
Namib Desert (Africa)	310,000
Thar Desert (Asia)	260,000

(a) What are the mean, median and mode of the areas listed?

(b) How many times the size of the Gobi Desert is the Namib Desert?

(c) What percentage of the deserts listed are in Asia?

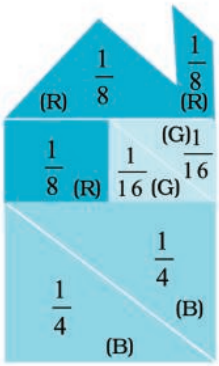
(d) What percentage of the total area of the deserts listed is in Asia?

139. **Geography Application:** Earth's total land area is about 148428950 km^2. The land area of Asia is about 30 per cent of this total. What is the approximate land area of Asia to the nearest square km?



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140. The pieces of Tangrams have been rearranged to make the given shape.



By observing the given shape, answer the following questions:

- What percentage of total has been coloured?
  - (i) Red (R) = _____
  - (ii) Blue (B) = _____
  - (iii) Green (G) = _____
- Check that the sum of all the percentages calculated above should be 100.
- If we rearrange the same pieces to form some other shape, will the percentatge of colours change?

(D) Applications

1. Healthy Diet

Keep a record of your diet for one day and compare with the nutritional guidelines given at the end of this unit and calculate the intake of each component. The table below gives recommendations of calories, proteins, calcium. carbohydrates and fat required for boys and girls between 11 and 14 years of age.

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Component	Girls	Boys
Total Calories	48.6 per kg of body weight	55.11 per kg of body weight
Protein (g)	46	45
Calcium (mg)	1,200	1,200
Carbohydrates(g)	330	375
Fat (g)	less than 75	less than 80

Now complete the table given below to calculate the percentage of difference.

Component	Consumed	Recommended	% of Difference
Calories			
Protein			
Calcium			
Carbohydrates			
Fat			

Consumed > Recommended for any component implies excess intake of the component and

$$\text{per cent of difference} = \frac{\text{Consumed} - \text{Recommended}}{\text{Recommended}} \times 100$$

Recommended > Consumed for any component implies deficiency of component and

$$\text{per cent of difference} = \frac{\text{Recommended} - \text{Consumed}}{\text{Recommended}} \times 100$$

2. Nutrtion Facts

Cut out a food label from any food item and analyse the nutritional value of the products. Use the information on the label to fill in the table given below and answer the questions that follow:

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Sample of Food Label

1. The first place to start with at the Nutrition Facts Label is the serving size and the number of servings in the package. Pay attention to the serving size, especially how many servings there are in the food package. Then ask yourself. 'How many servings am I consuming"? (e.g. 1/2 serving, 1 serving or more). If you ate the whole package, you would eat (2 × 280) grams of this sample food. That doubles the calories and other nutrient numbers, including percentage daily values as shown in the sample label.

2. Calories and Calories from Fat

Calories provide a measure of how much energy you get from a serving of this food. The calorie section of the label can help you manage your weight (i.e. gain, lose or maintain).

3. The Nutrients : How much?

Limit these Nutrients

It shows some key nutrients that impact on your health and separates. Eating too much fat, saturated fat, cholesterol or sodium may increase your risk of certain chronic diseases, like heart disease, some cancers or high blood pressure.

4. Get Enough of these Nutrients

Eating enough of these nutrients can improve your health and help reduce the risk of some diseases and conditions.

5. Understanding the footnote

The * used after the heading "% Daily Value" refers to the Footnote in the lower part of the nutrition label, which tells that "% Daily Values are based on a 2,000 calorie diet".

Nutrition Facts

Serving Size 280 grams
Service Per Container 2

Amount Per Serving

Calories 320 **Calories from Fat** 72

	% Daily Value
Total Fat 8g	12%
Saturated Fat-1.5g	8%
Cholesterol 5mg	2%
Sodium 780mg	32%
Total Carbohydrate 54g	18%
Dietary Fibre 6 gram	25%
Sugar 8g	
Protein 11g	44%

Vitamin A 8%	Vitamin C 40%
Calcium 0%	Iron 2%

Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	**2,000**	**2,500**
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fibre		25g	30g
Protein		25g	

Calories per gram:

Fat 9 -Carbohydrate 4 Protein 4

How the Daily Values Relate to the % DVs

Look at the example below for another way to see how the Daily Values (DVs) relate to the %DVs and dietary guidance. For each nutrient listed there is a DV, a %DV, and dietary advice or a goal.

Examples of DVs versus %DVs

Based on a 2,000 Calorie Diet

Nutrient	DV		% DV	Goal
Total Fat	65 g	=	100% DV	Less than
Saturated Fat	20 g	=	100% DV	Less than
Cholesterol	300 mg	=	100% DV	Less than
Sodium	2400 mg	=	100% DV	Less than
Total Carbohydrate	300 g	=	100% DV	At least
Dietary Fibre	25 g	=	100% DV	At least

Note : 1. ***The sodium should not be more than 3300 mg per day.***
2. ***The Dietary fibre should be between 25 – 35g per day.***

My food item is _____

Total Calories		**% Daily value based on a 2000 calorie Diet**
Proteins (g)		
Carbohydrates (g)		
Fat (g)		
Cholestrol (g)		
Sodium (mg)		
Fibre (g)		

What maximum percentage of total calories are from

1. Fat _____.
2. Carbohydrates _____.
3. Proteins _____.
4. Others _____.

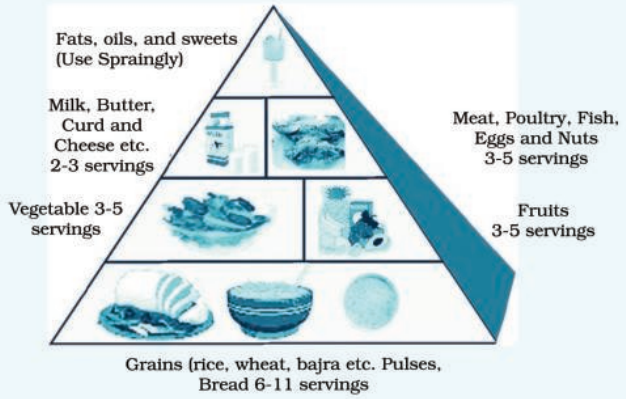
Check that the sum of all the percentages calculated above should be 100.

3. The Food Pyramid

The food guide pyramid should be kept in mind before planning an ideal menu. Everything on the pyramid is necessary for good nutrition.

Plan a menu for 1 day and classify the menu by categories in the food pyramid. Put a tick for each serving in the table given below. Calculate the total servings for each food group in the end and compare the total servings by the recommendations given in the food pyramid and answer the questions that follow:

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Example: Suppose your lunch consists of rice, chapati, curd, dal, vegetable, an apple and one sweet. This means that you have consumed 2 servings of grains, 1 serving of pulses, 1 serving of dairy products, 1 serving of fruits and 1 serving of sweets.

Foods	Grains, (rice, wheat, bajara etc.) pulses, chapati	Fruits	Vegetables	Meat, poultry, fish, eggs, nuts etc.	Milk, curd, cheese, oils butter etc.	Fats and sweets
Food Group	I	II	III	IV	V	VI
Breakfast Juice, Milk, Banana, Chapati etc.						
Lunch Chapati, Vegetable, Curd, Rice etc.						
Snack Curd, Chips Soup, Popcorn etc.						
Dinner Salad, Vegetables, Rice, Dal etc.						
Total Servings						

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1. What percentage of the total servings constitute fruits and vegetables in your diet?
2. Calculate the ratio of servings of food group-I items to food group item V of your diet.
3. Calculate the percentage of fats, oils and sweets you have consumed and compare with the given food pyramid.

4. Crossword Puzzle

Solve the given crossword and then fill up the given boxes in puzzles 4, 5 and 6. Clues are given below in each puzzle for across as well as down fillings. Also for across and down clues, clue number is written at the corner of the boxes. Answers of clues have to fill up in their respective boxes.

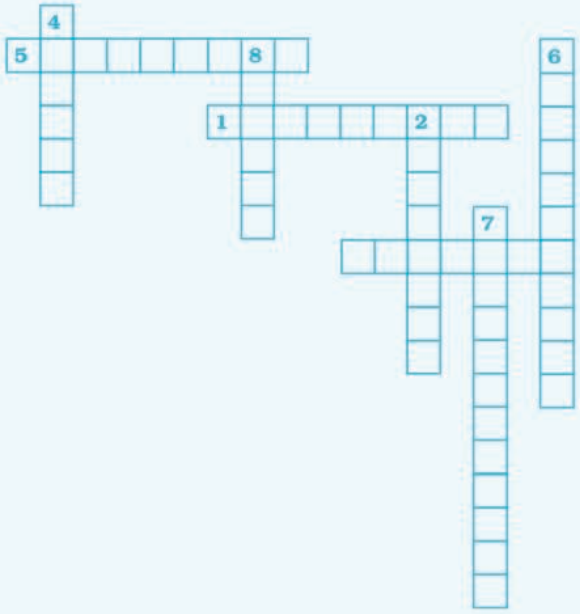
Across

1. This includes cost as well as overhead costs
3. The term representing per hundred or out of hundred
5. The amount of money borrowed
7. The amount paid at when shopkeeper sells the things

Down

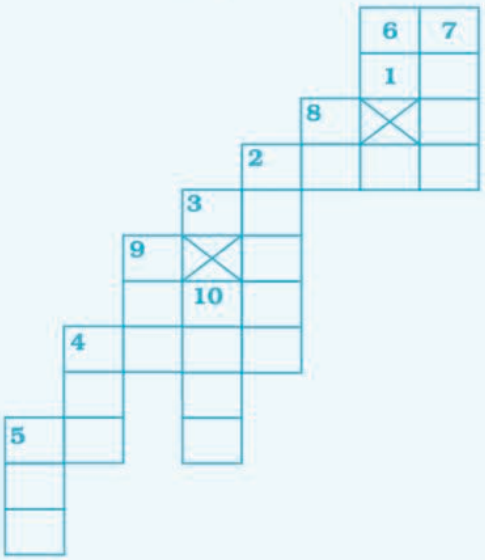
2. The extra money charged by borrower for using borrowed money for a given period of time.
4. Selling price – Cost price
6. Two equivalent ratios
8. Principal + Interest.

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5. Cross Number Puzzle

Across



1. Express 3 : 15 as per cent.
2. A worker is paid ₹ 2850 for 15 days. What amount will he receive if he works for 8 days?
3. 2% of 1 hour = _____ seconds.
4. Find the sum for which interest paid after 3 years is ₹ 450 at 5 per cent rate of interest per annum.
5. Price of a shirt decreased from ₹ 800 to ₹ 600 then the per cent decrease is _____.

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Down

6. A number whose 25 per cent is 8.
7. Out of 15000 people, 60 per cent people voted. Find the number of people who did not vote.
8. Convert $\frac{12}{16}$ into per cent.
2. A TV is bought for ₹ 10,000 and sold at a profit of 20%. Find SP.
9. SI on a sum of ₹ 7000 at a rate of 3.5% per annum borrowed for 2 years.
10. Shalu spends 90 per cent of her salary. Find her salary if her saving is ₹. 900.
4. The new price of an article of Rs 350 if there is a 10 per cent increase in the price.
5. Cost of 12 bats if cost of 5 bats is ₹ 90.

6. Cross Number Puzzle

Across

1. $33\frac{1}{3}\%$ of 150
2. The interest on a sum of ₹ 1200 for 2 years at 10% pa
3. The cost price of a pen if SP = ₹ 7 and profit is 40%.
4. Total length of the journey if 25 per cent of that journey is 75 km.

Down

2. The profit I earned by selling a watch worth ₹ 800 for ₹ 992.
5. The selling price of an item if the CP = ₹ 130 and loss = 20%.
6. The principal if the I = ₹ 80, R = 10% pa and T = 2 years.
7. 25% of 50% of 72

1				5
		2		
3	6			
			7	
4				

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The Nutrition Counter

The following table shows a variety of foods and the calories, protein, fat, carbohydrates and calcium contained in per 100 gm of edible portion. These data are approximate.

SI. No.	Name of the Food Stuff	Protein (N × 6.25) g.	Fat g.	Carbo-hydrates g.	Calcium mg.
CEREAL GRAINS AND PRODUCTS					
1.	BAJRA	11.6	5.0	67.5	42
2.	JOWAR	10.4	1.9	72.6	25
3.	MAIZE, tender	4.7	0.9	24.6	9
4.	RAGI	7.3	1.3	72.0	344
5.	RICE, parboiled, milled	6.4	0.4	79.0	9
6.	RICE, raw, milled	6.8	0.6	78.2	10
7.	RICE, flakes	6.6	1.2	77.3	20
8.	RICE, puffed	7.5	0.1	73.6	23
9.	SAMAI	7.7	4.7	67.0	17
10.	WHEAT, flour (whole)	12.1	1.7	69.4	48
11.	WHEAT, flour (refined)	11.0	0.9	73.9	23
12.	WHEAT, semolina	10.4	0.8	74.8	16
13.	WHEAT, vermicelli	8.7	0.4	78.3	22
14.	WHEAT, bread (brown)	8.8	1.4	49.0	18
15.	WHEAT, bread (white)	7.8	0.7	51.9	11
PULSES AND LEGUMES					
16.	BENGAL GRAM, dhal	20.8	5.6	59.8	56
17.	BLACK GRAM, dhal	24.0	1.4	59.6	154
18.	COW PEA	24.1	1.0	54.5	77
19.	GREEN GRAM, whole	24.	1.3	56.7	124
20.	KHESARI, dhal	28.2	0.6	56.6	90
21.	LENTIL	25.1	0.7	59.0	69
22.	MOTH BEANS	23.6	1.1	56.5	202
23.	PEAS green	7.2	0.1	15.9	20
24.	RAJMAH	22.9	1.3	60.6	260
25.	SOYABEAN	43.2	19.5	20.9	240
LEAFY VEGETABLES					
26.	BATHUA LEAVES	3.7	0.4	2.9	150
27.	BENGAL GRAM LEAVES	7.0	1.4	14.1	340
28.	CABBAGE	1.8	0.1	4.6	39
29.	CAULIFLOWER	5.9	1.3	7.6	626
30.	COLOCASIA LEAVES (green variety)	3.9	1.5	6.8	227

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31.	CORIANDER LEAVES	3.3	0.6	6.3	184
32.	CURRY LEAVES	6.1	1.0	18.7	830
33.	DRUMSTICK LEAVES	6.7	1.7	12.5	440
34.	FENUGREEK LEAVES	4.4	0.9	6.0	395
35.	LETTUCE	2.1	0.3	2.5	50
36.	MINT	4.8	0.6	5.8	200
37.	MUSTARD LEAVES	4.0	0.6	3.2	155
38.	RADISH LEAVES	3.8	0.4	2.4	265
39.	SPINACH	2.0	0.7	2.9	73
40.	TURNIP GREENS	4.0	1.5	9.4	710
ROOTS AND TUBERS					
41.	BEET ROOT	1.7	0.1	8.8	18.3
42.	CARROT	0.9	0.2	10.6	80
43.	ONION big	1.2	0.1	11.1	46.9
44.	ONION small	1.8	0.1	12.6	40
45.	POTATO	1.6	0.1	22.6	10
46.	RADISH pink	0.6	0.3	6.8	50
47.	RADISH white	0.7	0.1	3.4	35
48.	SWEET POTATO	1.2	0.3	28.2	46
49.	TURNIP	0.5	0.2	6.2	30
OTHER VEGETABLES					
50.	BEANS, scarlet runner	7.4	1.0	29.8	50
51.	BITTER GOURD, small	2.1	1.0	10.6	23
52.	BITTER GOURD	0.2	0.1	2.5	20
53.	BRINJAL	1.4	0.3	4.0	18
54.	CAULIFLOWER	2.6	0.4	4.0	33
55.	COLOCASIA STEM	0.3	0.3	3.6	60
56.	CUCUMBER	0.4	0.1	2.5	10
57.	FIGS, red *(Ficus cunia)*	1.2	0.6	10.8	187
58.	FRENCH BEANS	1.7	0.1	4.5	50
59.	GIANT CHILLIES (capsicum)	1.3	0.3	4.3	10
60.	JACK FRUIT, tender	2.6	0.3	9.4	30
61.	JACK FRUIT, seeds	6.6	0.4	25.8	50
62.	LADIES FINGER	1.9	0.2	6.4	66
63.	MANGO, green	0.7	0.1	10.1	10
64.	ONION STALKS	0.9	0.2	8.9	50
65.	PUMPKIN fruit	2.2	0.8	5.8	120
66.	TOMATO, green	1.9	0.1	3.6	20
NUTS AND OIL SEEDS					
67.	ALMOND	20.8	58.9	10.5	230
68.	CASHEWNUT	21.2	46.9	22.3	50

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69.	CHILGOZA	13.9	49.3	29.0	91
70.	COCONUT dry	6.8	62.3	18.4	400
71.	COCONUT fresh	4.5	41.6	13.0	10
72.	COCONUT water	1.4	0.1	4.4	24
73.	GROUNDNUT	25.3	40.1	26.1	90
74.	GROUNDNUT roasted	26.2	39.8	26.7	77
75.	PISTACHIO NUT	19.8	53.5	16.2	140
76.	WALNUT	15.6	64.5	11.0	100
77.	WATER MELON SEEDS (kernal)	34.1	52.6	4.5	100
CONDIMENTS AND SPICES					
78.	ASAFOETIDA	4.0	1.1	67.8	690
79.	CARDAMOM	10.2	2.2	42.1	130
80.	CHILLIES dry	15.9	6.2	31.6	160
81.	CHILLIES green	2.9	0.6	3.0	30
82.	CLOVES dry	5.2	8.9	46.0	740
83.	CLOVES green	2.3	5.9	24.1	310
84.	CORIANDER	14.1	16.1	21.6	630
85.	CUMIN SEEDS	18.7	15.0	36.6	1080
86.	FENUGREEK SEEDS	26.2	5.8	44.1	160
87.	GARLIC dry	6.3	0.1	29.8	30
88.	GINGER fresh	2.3	0.9	12.3	20
89.	MANGO POWDER	2.8	7.8	64.0	180
90.	PEPPER DRY (black)	11.5	6.8	49.2	460
91.	TAMARIND PULP	3.1	0.1	67.4	170
92.	TURMERIC	6.3	5.1	69.4	150
FRUITS					
93.	AMLA	0.5	0.1	13.7	50
94.	APPLE	0.2	0.5	13.4	10
95.	APRICOT fresh	1.0	0.3	11.6	20
96.	APRICOT dry	1.6	0.7	73.4	110
97.	BAEL FRUIT	1.8	0.3	31.8	85
98.	BANANA, ripe	1.2	0.3	27.2	17
99.	CHERRIES, red	1.1	0.5	13.8	24
100.	CURRANTS, black	2.7	0.5	75.2	130
101.	DATES dried	2.5	0.4	75.8	120
102.	DATES fresh	1.2	0.4	33.8	22
103.	GRAPES blue variety	0.6	0.4	13.1	20
104.	GRAPES pale green variety	0.6	0.4	13.1	20
105.	GUAVA, country	0.9	0.3	11.2	10
106.	JACK FRUIT	1.9	0.1	19.8	20
107.	LEMON	1.0	0.9	11.1	70
108.	LITCHI	1.1	0.2	13.6	10

109.	LIME	1.5	1.0	10.9	90
110.	MELON, musk	0.3	0.2	3.5	32
111.	MELON, water	0.2	0.2	3.3	11
112.	ORANGE	0.7	0.2	10.9	26
113.	ORANGE juice	0.2	0.1	1.9	5
114.	PAPAYA, ripe	0.6	0.1	7.2	17
115.	PEACHES	1.2	0.3	10.5	15
116.	PEARS	0.6	0.2	11.9	8
117.	PHALSA	1.3	0.9	14.7	129
118.	PINE APPLE	0.4	0.1	10.8	20
119.	PLUM	0.7	0.5	11.1	10
120.	POMEGRANATE	1.6	0.1	14.5	10
121.	RAISINS	1.8	0.3	74.6	87
122.	STRAWBERRY	0.7	0.2	9.8	30
	FISHES AND OTHER SEA FOODS				
123.	HILSA	21.8	19.4	2.9	180
124.	KATAL	19.5	2.4	2.9	530
125.	MACKEREL	18.9	1.7	0.5	429
126.	PRAWN	19.1	1.0	0.8	323
127.	ROHU	16.6	1.4	4.4	650
128.	SARDINE	21.0	1.9	–	90
129.	SHRIMP (small, dried)	68.1	8.5	–	4384
	MEAT AND POULTRY				
130.	BEEF muscle	22.6	2.6	–	10
131.	DUCK	21.6	4.8	0.1	4
132.	EGG, hen	13.3	13.3	–	60
133.	FOWL	25.9	0.6	–	25
134.	GOAT MEAT (lean)	21.4	3.6	–	12
135.	MUTTON, muscle	18.5	13.3	–	150
136.	PORK, muscle	18.7	4.4	–	30
	MILK AND MILK PRODUCTS				
137.	MILK buffalo's	4.3	6.5	5.0	210
138.	MILK cow's	3.2	4.1	4.4	120
139.	MILK goat's	3.3	4.5	4.6	170
140.	CURDS (cow's milk)	3.1	4.0	3.0	149
141.	BUTTER MILK	0.8	1.1	0.5	30
142.	SKIMMED MILK, liquid	2.5	0.1	4.6	120
143.	CHANNA, cow's milk	18.3	20.8	1.2	208
144.	CHANNA, buffalo's milk	13.4	23.0	7.9	480
145.	CHEESE	24.1	25.1	6.3	790
146.	KHOA (whole buffalo milk)	14.6	31.2	20.5	650

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147.	SKIMMED MILK POWDER(cow's milk)	38.0	0.1	51.0	1370
148.	WHOLE MILK POWDER (cow's milk)	25.8	26.7	38.0	950
	FATS AND EDIBLE OILS				
149.	BUTTER	–	81.0	–	–
150.	GHEE (cow)	–	100.0	–	–
151.	HYDROGENATED OIL (fortified)	–	100.0	–	–
152.	COOKING OIL (Groundnut, Gingelly, Palmolein, Mustard, Coconut, etc)	–	100.0	–	–
	SUGARS				
153.	SUGARY CANE	0.1	0	99.4	12
154.	HONEY	0.3	0	79.5	5
155.	JAGGERY (cane)	0.4	0.1	95.0	80
	BEVERAGES (Non-Alcoholic)				
156.	SUGAR CANE JUICE	0.1	0.2	9.1	10