(1) A fertilizer is produced by combining Nitrogen, Phosphorous and Potassium. The ratio of Nitrogen to Phosphorous is 5:3 and the ratio of Phosphorous to Potassium is 6:1. Find the ratio of Nitrogen to Phosphorous to Potassium in this fertilizer.
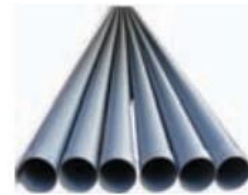
(2) $198 \div 11 = 18$. Find the value of each of the following divisions accordingly.

    (i) $198 \div 1.1$ (ii) $198 \div 0.11$ (iii) $1980 \div 0.011$

(3) How many pipes of length 2.4 m each are required to construct a pipeline of length 720 m?

(4) A motor car travelled 150.78 km in 4 hours. Find the distance it travelled in an hour by assuming that it travelled an equal distance each hour.

(5) The mass of a brick is approximately 2.3 kg. To construct a wall, 2500 such bricks are required.

    (i) Estimate the total mass of the bricks.

    (ii) A lorry can transport a mass of up to 2 metric tons per trip. Estimate how many such lorries are required to transport these 2500 bricks.

(6)

Fabric of length $2\frac{1}{4}$ m is required to sew a dress. What is the maximum number of such dresses that can be sewn from $56\frac{1}{4}$ m of fabric?

(7)

Simplify each of the following fractions.

(i) $2\frac{1}{4} \div 2\frac{2}{3}$

(ii) $7\frac{7}{8} \div 3\frac{1}{2}$

(iii) $6\frac{3}{5} \div 4\frac{5}{7}$

(iv) $7\frac{5}{8} \div 8\frac{5}{7}$

(v) $11\frac{1}{2} \div 2\frac{3}{4}$

(vi) $5\frac{1}{3} \div 2\frac{1}{2}$

(8)

Find the value of each of the following.

(i) $\frac{3}{5} \div 2\frac{2}{5}$

(ii) $\frac{6}{7} \div 1\frac{1}{5}$

(iii) $\frac{8}{11} \div 3\frac{1}{5}$

(iv) $\frac{3}{8} \div 2\frac{1}{4}$

(v) $1\frac{4}{5} \div \frac{3}{5}$

(vi) $2\frac{1}{2} \div \frac{5}{7}$

(vii) $10\frac{2}{3} \div \frac{16}{27}$

(viii) $2\frac{3}{5} \div \frac{1}{2}$

(9)

Simplify the following.

(i) $\frac{2}{3} \times 1\frac{1}{3}$

(ii) $\frac{3}{5} \times 1\frac{1}{4}$

(iii) $\frac{5}{8} \times 1\frac{2}{3}$

(iv) $\frac{7}{10} \times 2\frac{1}{7}$

(v) $\frac{1}{6} \times 2\frac{1}{5}$

(vi) $\frac{3}{5} \times 3\frac{1}{9}$

(vii) $\frac{7}{10} \times 33\frac{1}{3}$

(viii) $\frac{5}{12} \times 3\frac{3}{11}$

(ix) $2\frac{1}{2} \times \frac{1}{5}$

(x) $3\frac{3}{4} \times \frac{7}{10}$

(xi) $\frac{2}{5} \times \frac{1}{2} \times 2\frac{1}{2}$

(xii) $\frac{3}{4} \times \frac{2}{5} \times 1\frac{1}{6}$

(10)

Simplify the following.

(i) $\frac{6}{7} - \frac{2}{7}$

(ii) $\frac{7}{10} - \frac{2}{5}$

(iii) $\frac{1}{3} - \frac{2}{7}$

(iv) $1 - \frac{1}{5}$

(v) $\frac{7}{8} - \frac{5}{6}$
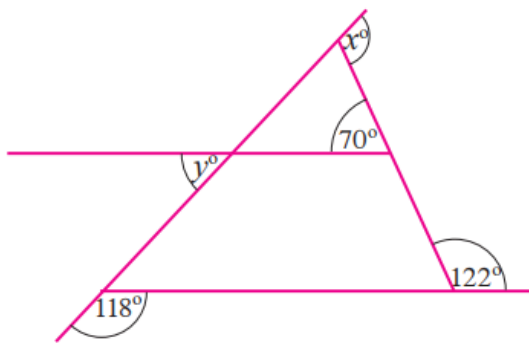
(vi) $3\frac{7}{8} - 1\frac{1}{2}$

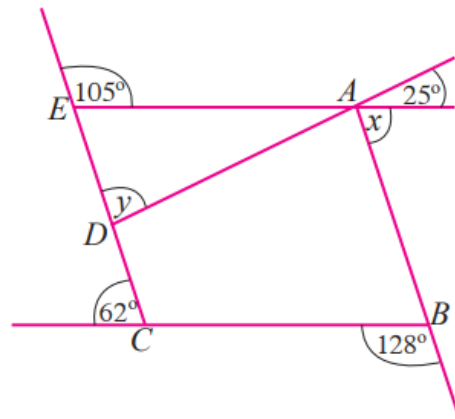(vii) $3 - 1\frac{5}{8}$

(viii) $2\frac{2}{5} - 1\frac{3}{20}$

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(11)

Find the values of x and y in each figure.

(i)

(ii)

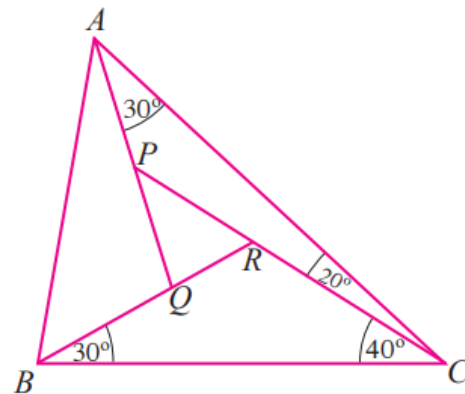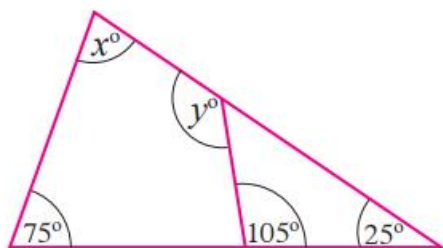**(12)**

According to the information marked in the figure,

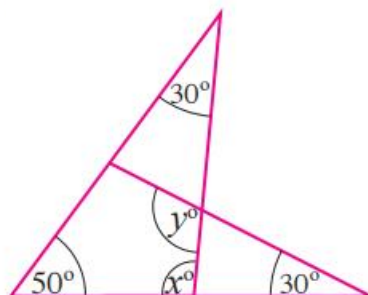 (i) find $B\hat{R}C$.
 (ii) find $A\hat{P}C$.
(iii) find $B\hat{Q}A$.

(13) Find the value of x and y.

(i)

(ii)

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(14)

A lorry of mass 3 t 450 kg is loaded with 2 t 700 kg of sugar and 4 t of rice. Find the total mass of the lorry with the goods loaded in it.

(15) Factorize.

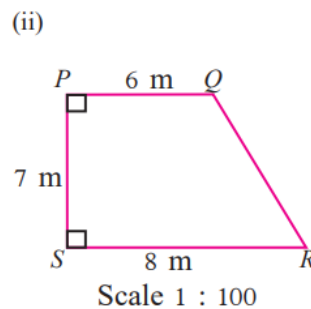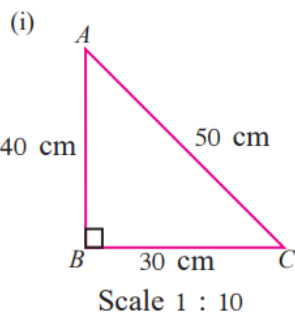(i) $xyz - 2xyp$ (ii) $12x - 20xy$ (iii) $ab + ac - ad$

(iv) $p + pq + pqr$ (v) $xp - xy - x$ (vi) $6ab - 8ab^2 + 12ac$

(16) Draw scale diagrams of each of the figures given in the following sketches, to the given scale.

(i)

Scale 1 : 10

(ii)

Scale 1 : 100

(17) A cyclist had a training schedule for a month. The distance he cycled each day is given below in kilometres.

Stem	Leaf
1	5 5 8
2	0 1 3 4 6 7
3	2 4 5 6 6 8 8
4	0 2 4 4 5 6 8 8
5	1 2 4 6
6	3 5

Key : 5|1 means 51.

(i) What is the minimum value of this data?
(ii) What is the maximum distance he cycled in a day during this period?
(iii) Find the range of this data.

(iv) Find the median value.

(18) The mass in kilogrammes of the bags of 30 pilgrims who flew to their destination in Dambadiva are given below. Represent this data in a stem and leaf diagram.

30	29	27	28	19	22	18	21	20	24
28	12	23	30	09	21	17	25	27	26
26	10	29	25	24	20	15	29	29	28

(19) From the given terms, select and write the most suitable term for each of the regions indicated by an English letter.

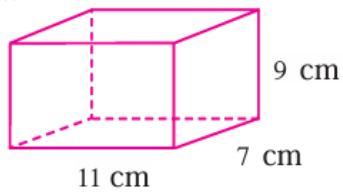(i)   (ii)   (iii)

(iv)   (v)   (vi)

(vii)   (viii)   (ix)
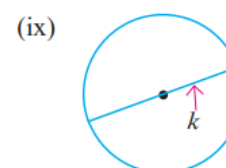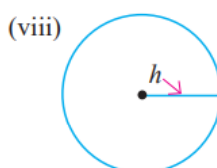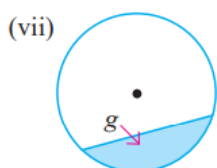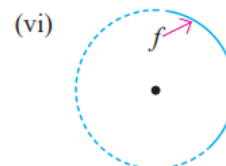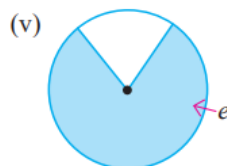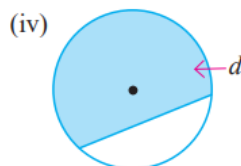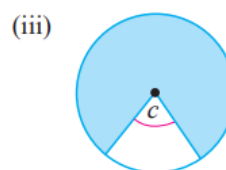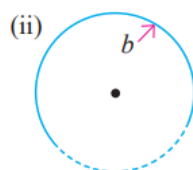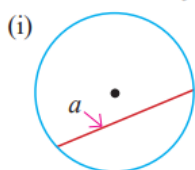
(a radius, a sector, a chord, a minor arc, a minor segment, a major segment, a diameter, a major arc, a central angle)

(20)

a) If the minimum percentage of marks required to pass an examination marked out of 300 is 60%, what is the minimum mark required to pass the examination?

b) 15% of the workers in an establishment are men. If the total number of workers in the establishment is 800, how many male workers are there?

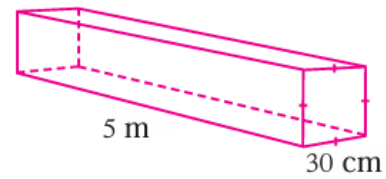**(21)** Find the surface area of each of the cuboid shaped solids shown below.

(i)

9 cm
7 cm
11 cm

(ii)

45 mm
60 mm
15 mm

(iii)

5 m
30 cm
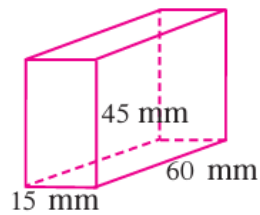
(22) Find the mode, the median, the mean and the range of each collection of data.

(i) 8, 9, 12, 10, 12, 7, 8, 6, 10, 5, 8

(ii) 33, 32, 18, 33, 45, 23, 53, 32, 33

(iii) 78, 78, 80, 70, 78, 65, 69, 70

(iv) 3.5, 2.5, 4.8, 1.3, 3.9

(v) 12.5, 32.4, 23.6, 8.3

(23) The number of matchsticks in 10 boxes of matches is given here.

49, 50, 48, 47, 49, 50, 49, 50, 47, 51.

For these boxes of matchsticks, find

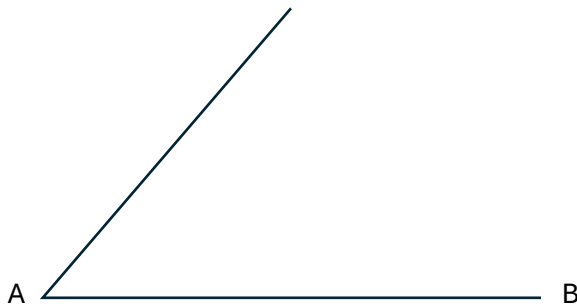(i) the mode,

(ii) the median,

(iii) the mean number of matchsticks in a box.

(24) Measure the following angle using a protractor and Construct angle bisector. Construct perpendicular bisector to the line AB.

A — — — — — — — — — — B

(25) In a survey about customers' favorite toppings, the results were recorded in the form of the bar graph. Use the bar graph to answer the given questions.

Favourite Pizza Toppings
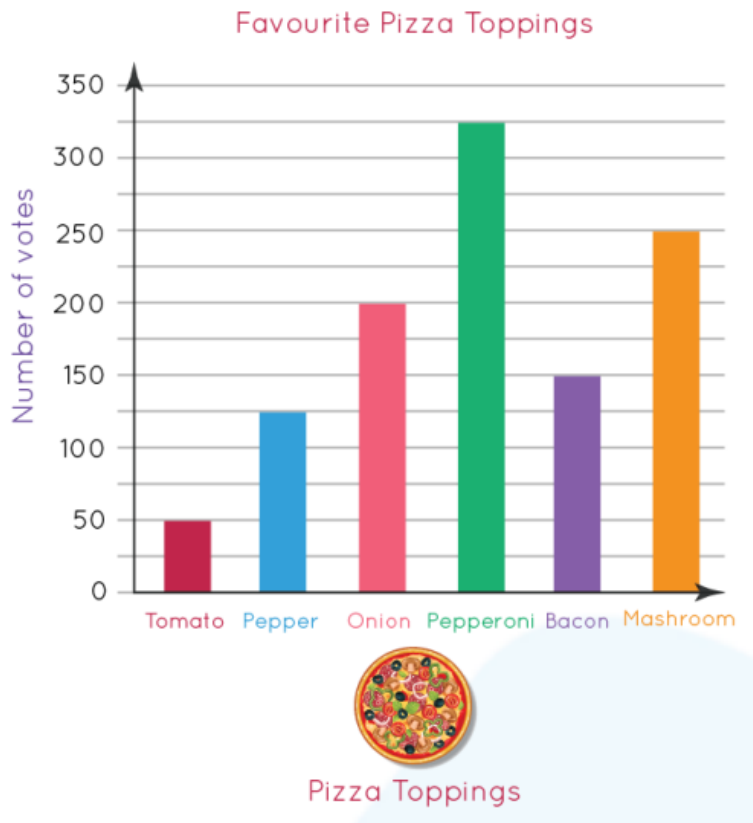
a. Which is the most popular topping? _____

b. Which topping has 250 votes? _____

26) Increase 20 by 350 % =

27) Decrease 30 by 45% =

28) The bearing of A from B is 065^0. Find the bearing of B from A.

29) $\sqrt[3]{259} - \sqrt{38}$ =

30) $\dfrac{5^3 \times 3^5 - 3 \times 5}{3^2} =$

30) An unbiased die with its faces marked from 1 to 6 is rolled. Find the probability of each of the following events,
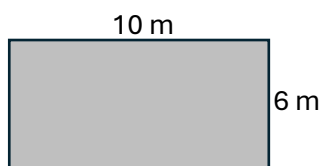
a) An odd number showing up.

b) A prime number showing up.

c) A square number showing up.

d) The number 4 showing up.

31) Draw scale diagrams of the figure given in the following sketch, to the given scale.

10 m

6 m

Scale= 1: 200

32) There are 3 white beads 2 black beads and 1 blue bead in a bag, which are identical in size and shape. A bead is drawn randomly from the bag. Find the probability of each of the following events.

  (i) Drawing a white bead
 (ii) Drawing a black bead.
(iii) Drawing a blue bead.
(iv) Drawing a white bead or a black bead.
 (v) Drawing a bead which is not black in colour.
(vi) Drawing a red bead.

33) Draw scale diagrams of each of the figures given in the following sketches, to the given scale.

(i)

A

40 cm   50 cm

B   30 cm   C

Scale 1 : 10

(ii)

P   6 m   Q

7 m

S   8 m   R

Scale 1 : 100
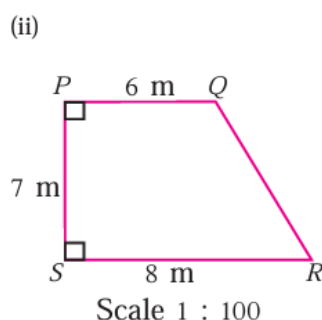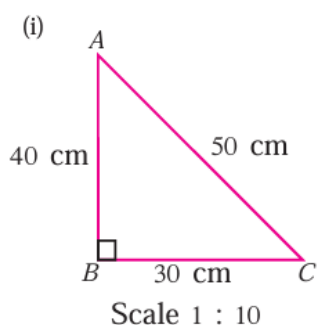
40) 30 students in Grade 8 were given 40 English words to read and then write down. The number of incorrect words written by each student is given below.

16	24	12	15	10	23
23	15	13	19	14	25
26	21	31	24	19	27
35	12	17	29	18	29
32	18	27	31	21	31

 (i) Represent this data in a stem and leaf diagram.

(ii) How many incorrect words were written by the student who wrote the least number of incorrect words?

(iii) How many incorrect words were written by the student who wrote the most number of incorrect words?

(iv) Find the range of the incorrect words written by this group of students.

 (v) Write the groups of ten to which the greatest and least values belong.

41) If the minimum percentage of marks required to pass an examination marked out of 300 is 60%, what is the minimum mark required to pass the examination?

42) 15% of the workers in an establishment are men. If the total number of workers in the establishment is 800, how many male workers are there?

43) Express each of the following percentages as a fraction and simplify it.

(i) 25% (ii) 40% (iii) 16% (iv) 150%

(v) 120% (vi) 58% (vii) 32% (viii) 175%

(ix) $12\frac{1}{3}$ % (x) $3\frac{1}{3}$ % (xi) $1\frac{3}{5}$ % (xii) 2.25%

44) Solve each of the following equations. Check the accuracy of the solution.

(i) $2\,(x+3)=8$ (ii) $3\,(p-2)=9$ (iii) $2\,(2x-1)=6$

(iv) $5\,(1-3x)=20$ (v) $2\,(3-4x)-1=-19$ (vi) $10\,(2x+1)-5=25$

(vii) $2(\frac{x}{3}-1)=(-6)$ (viii) $2\,(\frac{5x}{2}+1)=-18$ (ix) $2-\frac{3x}{4}=(-7)$

45) Construct a simple equation for each of the statements given below and solve it.

(i) When 5 is added to the value of x, the result is 12.
(ii) When 3 is subtracted from the value of a, the result is 8.
(iii) Shashi's age is denoted by x. Her sister who is 2 years older to her is 12 years old.

46) In a certain farm, there are cattle, goats and hens. The ratio of cattle to goats is 4 : 3 and the ratio of cattle to hens is 2 : 7.

(i) Find the ratio of cattle to goats to hens.
(ii) If there are 105 animals of these three types in the farm, find separately the number of cattle, goats and hens in the farm.

47) Write each of the ratios given below in the simplest form.

(i) 6 : 15 (ii) 8 : 20 (iii) 30 : 18 : 36 (iv) 40 : 16 : 64

48)   Find the value of each of the following.

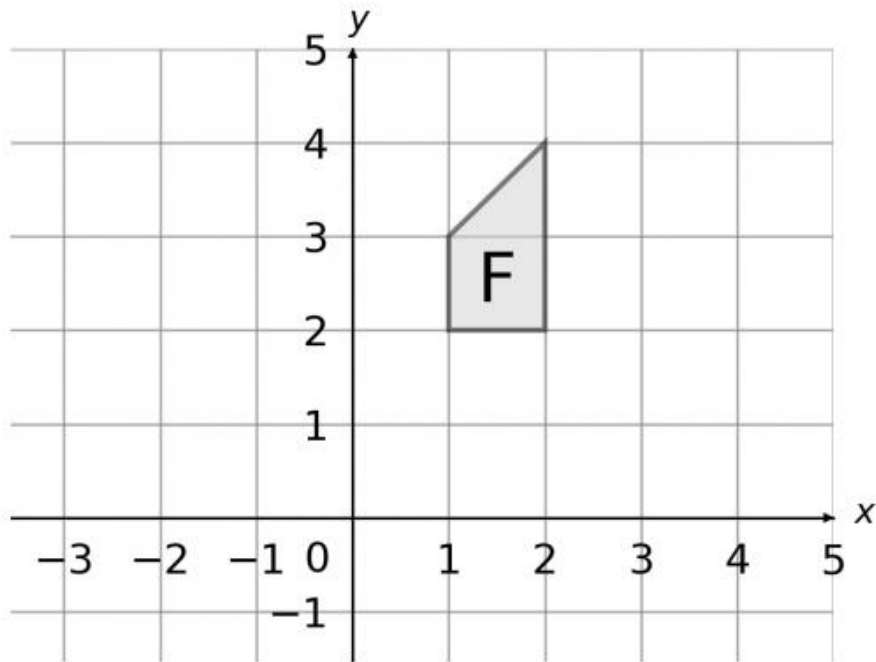(i) $5.2 \div 0.4$ (ii) $0.75 \div 0.5$ (iii) $0.075 \div 2.5$
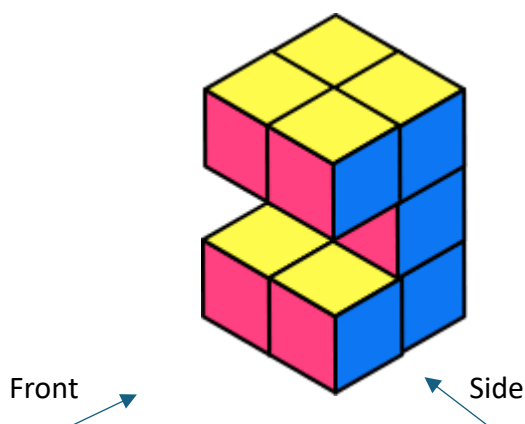
(iv) $3.74 \div 1.1$ (v) $0.195 \div 1.5$

49) The following question about transformations.

a) 90^0 rotations around the point (1,1)

b) Reflection from the line y=2

c) Translation 2 squares right and 3 squares down.

50) Draw the side view, front view, and plan view of the following 3-D shape.

Front   Side

51) Enlarge triangle ABC by scale factor 2, using the point P as the centre of enlargement.