पुनना International School

Shree Swaminarayan Gurukul, Zundal

CLASS-VI

MATHEMATICS

SPECIMEN COPY

YEAR-2020-21
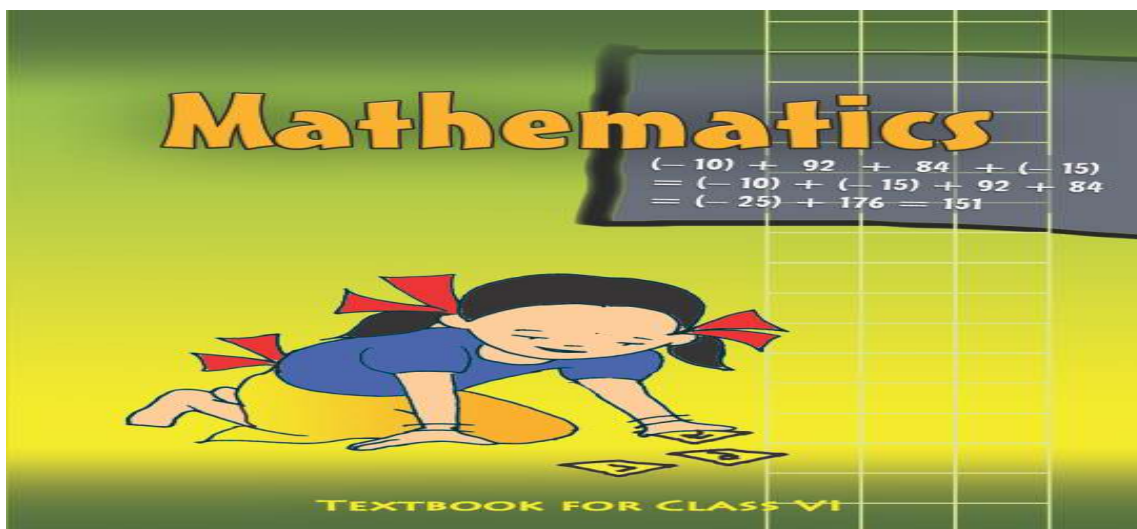
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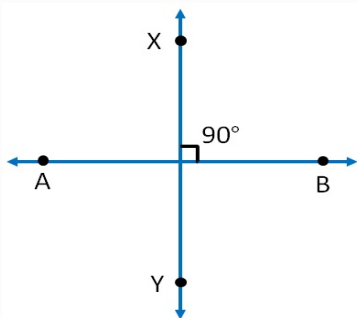| P A-1 syllabus lesson 1 to 3	S A -1 syllabus lesson 1 to 7

LESSON -5

UNDERSTANDING ELEMENTARY SHAPES
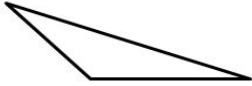
*SUMMARY
> ➢ **INTRODUCTION**

> ➢ **MEASURING LINE SEGMENT**

> ➢ **ANGLES ' RIGHT' AND 'STRAIGHT'**

> ➢ **ANGLES –'ACUTE' , 'OBTUSE' AND 'REFLEX'**

> ➢ **PERPENDICULAR LINE**

> ➢ **NAMING TRIANGLE BASED ON SIDES AND ANGLES**

> ➢ **QUADRILATERALS**

> ➢ **POLYGONS**

PERPEDICULAR LINE- Perpendicular lines are **lines** that intersect at a right (90 degrees) angle.

NAMING TRIANGLE BASED ON SIDES AND ANGLES

Classifying Triangles

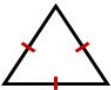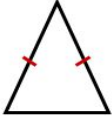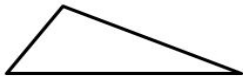|			
Angle Name	Acute - **All angles less than 90°.**	Right - **Only One angle equal to 90°.**	Obtuse - **Only One angle more than 90°.**
Side Name	Equilateral - **All three sides equal.**	Isosceles - **Two sides equal.**	Scalene - No equal sides.

(Ex. 5.1)

Question 1.What is the disadvantage in comparing line segments by mere observation?
Answer: There may be chance of error due to improper viewing.

Question 2.Why is it better to use a divider than a ruler, while measuring the length of a line segment?
Answer: It is better to use a divider than a ruler, because the thickness of the ruler may cause difficulties in reading off her length. However divider gives up accurate measurement.

Question 3.Draw any line segment, say AB. Take any point C lying in between A and B. Measure the lengths of AB, BC and AC. Is AB = AC + CB?
[Note: If A, B, C are any three points on a line, such that AC + CB = AB, hence we can be sure that C lies between A and B.]

Answer: Yes.
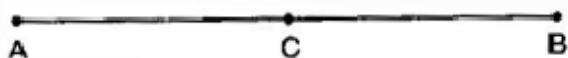
AB = 6.5 cm, AC = 3cm, CB = 3.5 cm

AC + CB = 3 cm + 3.5 cm = 6.5 cm = AB

Question 4.If A, B, C are three points on a line such that AB = 5 cm, BC = 3cm and AC = 8 cm, which one of them lies between the other two?
Answer: AC is the longest line segment, thus B is the point between A and C.

Question 5.Verify whether D is the mid-point of AG
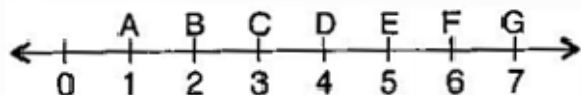
Answer: AD = 3 units, DG = 3 units
AD = DG.

Thus, D is the mid-point.
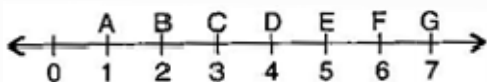
Question 6. If B is the mid-point of AC and C is the mid-point of BD‾‾‾‾,BD‾, where A, B, C, D lie on a straight line, say why AB = CD?
Answer: B is the mid-point of AC.
∴∴ AB = BC ……….(i)
And C is the mid-point of BD.
∴∴ BC = CD ……….(ii)
From eq. (i) and (ii),

AB = CD

Question 7.Draw five triangles and measure their sides. Check in each case, of the sum of the lengths of any two sides is always less than the third side.

Answer: Yes, sum of two sides of a triangle is always greater than the third side.

EXERCISE-5.2

Question 1.What fraction of a clockwise revolution does the hour hand of a clock turn through, when it goes from

(a) 3 to 9, (b) 4 to 7, (c) 7 to 10, (d) 12 to 9, (e) 1 to 10, (f) 6 to 3

Answer:
(a) 1/2or two right angles
(b) 1/4 or oneright angle
(c) 1/4 or one right angle
(d) 3/4 or three right angles.
(e) 3/4 or three right angles.
(f) 3/4 or three right angles.

Question 2Where will the hand of a clock stop if it:
(a)starts at 12 and make 1/2 of a revolution, clockwise?
(b)starts at 2 and makes 1/2 of a revolution, clockwise?
(cstarts at 5 and makes 1/4 of a revolution, clockwise?
(d)starts at 5 and makes 3/4 of a revolution, clockwise?
Answer: (a) At 6, (b) At 8, (c) At 8, (d) At 2

Question 3.Which direction will you face if you start facing:
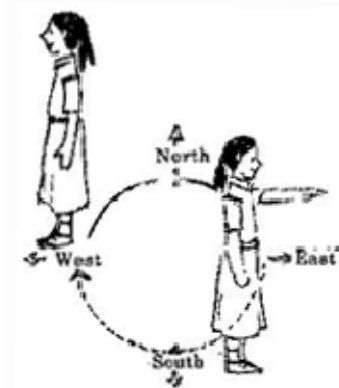
(a)East and make 1/2 of a revolution clockwise?
(b)East and make 1/2 of a revolution clockwise?
(c)West and makes 3/4 of a revolution, clockwise?
(d)South and make one full revolution?

(Should we specify clockwise or anti-clockwise for this last question? Why not?)

Answer: (a) West, (b) West , (c) North, (d) South
(For answer (d), it is immaterial whether we turn clockwise or anticlockwise, because one full revolution will bring us back to the original position)

Question 4.What part of a revolution have you turned through if you stand facing:

(a)East and turn clockwise to face north?

(b)South and turn clockwise to fase east?

(c)West and turn clockwise to face east?

Answer:
(a) 3/4
(b) 3/4
(c) 1/2

Question 5.Find the number of right angles turned through by the hour hand of a clock when it goes from:
(a) 3 to 6, (b) 2 to 8, (c) 5 to 11, (d) 10 to 1, (e) 12 to 9, (f) 12 to 6

Answer:
(a) One right angle

(b) Two right angles

(c) Two right angles

(d) One right angle

(e) Three right angles

(f) Two right angles

Question 6.How many right angles do you make if you start facing:
(a)South and turn clockwise to west?

(b)North and turn anti-clockwise to east?

(c)West and turn to west?

(d)South and turn to north?

Answer:
(a) One right angle

(b) Three right angles

(c) Four right angles

(d) Two right angles

Question 7. Where will the hour hand of a clock stop if it starts:
(a) from 6 and turns through 1 right angle?

Ans-At 9

b)from 8 and turns through 2 right angles?

Ans-At 2

c)from 10 and turns through 3 right angles?

Ans- At -7

d)from 7 and turns through 2 straight angles?

Ans- At -7

EXERCISE-5.3

Question 1.Match the following:
(i)Straight angle (a) less than one-fourth a revolution

(ii)Right angle (b) more than half a revolution

(iii)Acute angle (c) half of a revolution

(iv)Obtuse angle (d) one-fourth a revolution

(v)Reflex angle (e) between 1414 and 1212 of a revolution
(f) one complete revolution

Answer:
(i) → (c)
(ii) →(d)
(iii) → (a)
(iv) → (e)
(v) → (b)
Question 2.Classify each one of the following angles as right, straight, acute, obtuse or refles:

(a)　　　　　　　(b)　　　　　　　(c)

(d)　　　　　　　(e)　　　　　　　(f)
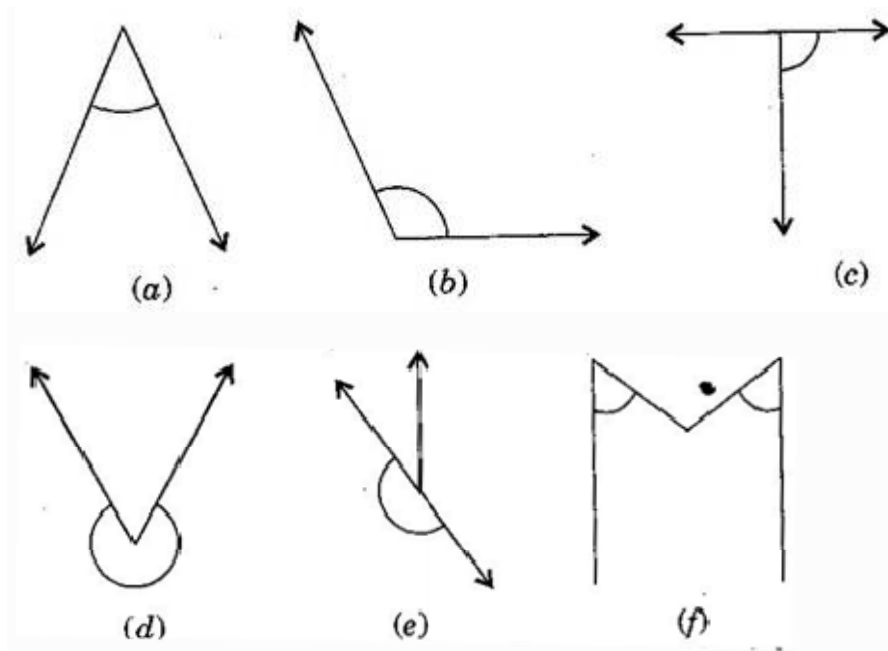
Answer:

(a) Acute angle

(b) Obtuse angle

(c) Right angle

(d) Reflex angle

(e) Straight angle

(f) Acute angle

EXERCISE-5.4

Question 1.What is the measure of (i) a right angle? (ii) a straight angle?
Answer:
(i) 90∘
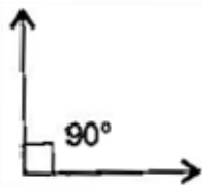
(ii) $180\circ$

Question 2.Say True or False:
(a)The measure of an acute angle $<90\circ$.true
(b)The measure of an obtuse angle $>90\circ$.false
(c)The measure of a reflex angle $>180\circ$.true
(d)The measure of on complete revolution= $360\circ$.true
(e)If m∠A = $53\circ$ and m∠B = $35\circ$ then m∠A>m∠B.true

Question 3.Write down the measure of:
(a)some acute angles (b) some obtuse angles

(give at least two examples of each)

Answer:
(a) $35\circ,20\circ35\circ,20\circ$
(b) $110\circ,135\circ110\circ ,135\circ$

Question 4.Measure the angles given below, using the protractor and write down the measure:
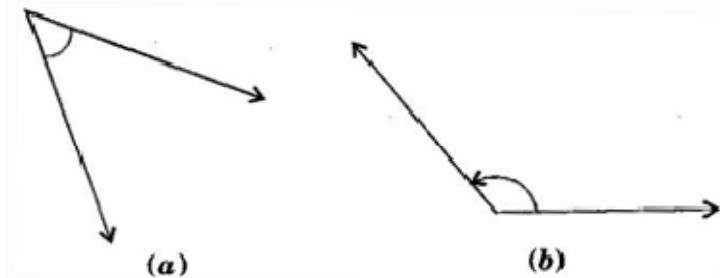
Answer:
(a) 40∘
(b) 130∘
(c) 90∘
(d) 60∘

Question 5.Which angle has a large measure? First estimate and then measure:
Measure of angle A =

Measure of angle B =

Answer: ∠B has larger measure.
∠A = 40∘ and ∠B = 65∘

Question 6.From these two angles which has larger measure? Estimate and then confirm by measuring them:

Answer: Second angle has larger measure

Question 7.Fill in the blanks with acute, obtuse, right or straight:
(a)An angle whose measure is less than that of a right angle is **acute angle.**

(b)An angle whose measure is greater than that of a right angle is **obtuse angle.**

(c)An angle whose measure is the sum of the measures of two right angles is **straight angle.**

(d)When the sum of the measures of two angles is that of a right angle, then each one of them **is acute angle**.

(e)When the sum of the measures of two angles is that of a straight angle and if one of them is acute then the other should be **obtuse angle**.

Answer: (a) acute angle, (b) obtuse angle, (c) straight angle, (d) acute angle, (e) obtuse angle

Question 8.Find the measure of the angle shown in each figure. (First estimate with your eyes and then find the actual measure with a protractor).
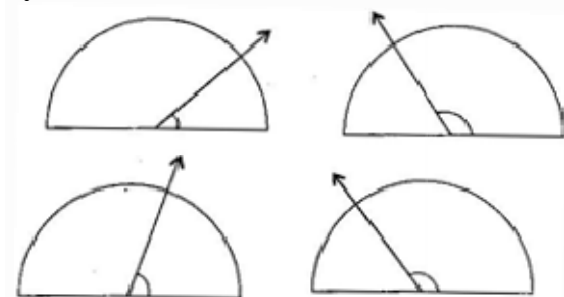
Answer:
(i)30∘

(ii) 120∘

(iii) 60∘

(iv) 150∘

Question 9.Find the angle measure between the hands of the clock in each figure:

9.00 a.m.   1.00 p.m.   6.00 p.m.
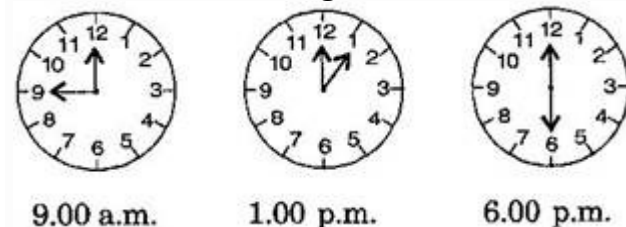
Answer:
(i)90∘ (Right angle)
(ii) 30∘ (Acute angle)
(iii) 180∘ (Straight angle)

Question 10.Investigate:

In the given figure, the angle measure $30\circ.30\circ$. Look at the same figure through a magnifying glass. Does the angle becomes larger? Does the size of the angle change?

Answer: No, the measure of angle will be same.

Question 11.Measure and classify each angle:

Angle	∠AOB	∠AOC	∠BOC	∠DOC	∠DOA	∠DOB
Measure						
Type						

Answer:
Sol.

Angle	∠AOB	∠AOC	∠BOC	∠DOC	∠DOA	∠DOB
Measure	40∘	130∘	90∘	90∘	140∘	180
Type	Acute	Obtuse	Right	Right	Obtuse	straight

EXERCISE-5.5

Question 1. Which of the following are models for perpendicular lines:
(a)The adjacent edges of a table top.

(b)The lines of a railway track.

(c) The line segments forming the letter 'L'.

(d)The letter V.

Answer: (a) Perpendicular
(b) Not perpendicular

(c) Perpendicular

(d) Not perpendicular

Question 2.Let PQ **be the perpendicular to the line**
segment XY. **Let** PQ **and** XY **intersect in the point A. What is the measure of** $\angle PAY$.
Answer: Sol.

$\angle PAY = 90\circ$

Question 3N.There are two "set-squares" in your box. What are the measures of the angles that are formed at their corners? Do they have any angle measure that is common?
Answer: One set-square has $45\circ,90\circ,45\circ$ and other set-square
has $60\circ,90\circ,30\circ$. They have $90\circ$ as common angle.

Question 4.Study the diagram. The line l **is perpendicular to line** m.

(a)Is CE = EG?

(b)Does PE bisect CG?

(c)Identify any two line segments for which PE is the perpendicular bisector.

(d)Are these true?

(i) AC > FG

(ii) CD = GH

(iii) BC < EH

Answer:
(a) Yes, both measure 2 units.

(b) Yes, because CE = EG

(c) DF and CG, BH
(d) (i) True, (ii) True, (iii) True

EXERCISE-5.6

Question 1.Name the types of following triangles:
(a)Triangle with lengths of sides 7 cm, 8 cm and 9 cm.

(b)ΔABC with AB = 8.7 cm, AC = 7 cm and BC = 6 cm.
(c)ΔPQR such that PQ = QR = PR = 5 cm.
(d)ΔDEF with m$\angle$D = 90∘
(e)ΔXYZ with m$\angle$Y = 90∘ and XY = YZ
(f)ΔLMN with m$\angle$L = 30∘,m$\angle$M = 70∘ and m$\angle$N = 80∘.
Answer:
(a) Scalene triangle

(b) Scalene triangle

(c) Equilateral triangle

(d) Right-angled triangle

(e) Isosceles right-angled triangle

(f) Acute-angled triangle

Question 2.Match the following:

Measure of Triangle	Types of Triangle
(i)3 sides of equal length	(a) Scalene
(ii) 2 sides of equal length	(b) Isosceles right angle
(iii) All sides are of different length	(c) Obtuse angle
(iv) 3 acute angles	(d) Right angle
(v) 1 right angle	(e) Equilateral
(vi) 1 obtuse angle	(f) Acute angle
(vii) 1 right angle with two sides of equal length	(g) Isosceles

Answer: (i) → (e), (ii) → (g), (iii) → (a), (iv) → (f), (v) → (d), (vi) → (c), (vii) → (b)

Question 3.Name each of the following triangles in two different ways: (You may judge the nature of angle by observation)

Answer:

(a) Acute angled triangle and Isosceles triangle

(b) Right-angled triangle and Scalene triangle

(c) Obtuse-angled triangle and Isosceles triangle

(d) Right-angled triangle and Isosceles triangle

(e) Equilateral triangle and acute angled triangle

(f) Obtuse-angled triangle and scalene triangle

Question 4.Try to construct triangles using match sticks. Some are shown here.

Can you make a triangle with:

(a)3 matchsticks?

(b)4 matchsticks?

(c)5 matchsticks?

(d)6 matchsticks?

(Remember you have to use all the available matchsticks in each case)

If you cannot make a triangle, think of reasons for it.

Answer:
(a) 3 matchsticks

This is an acute angle triangle and it is possible with 3 matchsticks to make a triangle because sum of two sides is greater than third side.

(b) 4 matchsticks

This is a square, hence with four matchsticks we cannot make triangle.

(c) 5 matchsticks

This is an acute angle triangle and it is possible to make triangle with five matchsticks, in this case sum of two sides is greater than third side.

(d) 6 matchsticks

This is an acute angle triangle and it is possible to make a triangle with the help of 6 matchsticks because sum of two sides is greater than third side.

EXERCISE-5.7

Question 1.Say true or false:
(a)Each angle of a rectangle is a right angle.

(b)The opposite sides of a rectangle are equal in length.

(c)The diagonals of a square are perpendicular to one another.

(d)All the sides of a rhombus are of equal length.

(e)All the sides of a parallelogram are of equal length.

(f)The opposite sides of a trapezium are parallel.

Answer: (a) True, (b) True, (c) True, (d) True, (e) False, (f) False

Question 2.Give reasons for the following:
(a)A square can be thought of as a special rectangle.

(b)A rectangle can be thought of as a special parallelogram.

(c)A square can be thought of as a special rhombus.

(d)Squares, rectangles, parallelograms are all quadrilateral.

(e)Square is also a parallelogram.

Answer:
(a) Because its all angles are right angle and opposite sides are equal.

(b) Because its opposite sides are equal and parallel.

(c) Because its four sides are equal and diagonals are perpendicular to each other.

(d) Because all of them have four sides.

(e) Because its opposite sides are equal and parallel.

Question 3.A figure is said to be regular if its sides are equal in length and angles are equal in measure. Can you identify the regular quadrilateral?
Answer: A square is a regular quadrilateral.

EXERCISE-5.8

Question 1.Examine whether the following are polygons. If anyone among these is not, say why?

Answer:
(a) As it is not a closed figure, therefore, it is not a polygon.

(b) It is a polygon because it is closed by line segments.

(c) It is not a polygon because it is not made by line segments.

(d) It is not a polygon because it not made only by line segments, it has curved surface also.

Question 2.Name each polygon:

Answer:
(a) Quadrilateral, (b) Triangle, (c) Pentagon, (d) Octagon

Question 3 .Draw a rough sketch of a regular hexagon. Connecting any three of its vertices, draw a triangle. Identify the type of the triangle you have drawn.
Answer: ABCDEF is a regular hexagon and triangle thus formed by joining AEF is an isosceles triangle.

Question 4.Draw a rough sketch of a regular octagon. (Use squared paper if you wish). Draw a rectangle by joining exactly four of the vertices of the octagon.
Answer: ABCDEFGH is a regular octagon and CDGH is a rectangle.

Question 5.A diagonal is a line segment that joins any two vertices of the polygon and is not a side of the polygon. Draw a rough sketch of a pentagon and draw its diagonals.
Answer: ABCDE is the required pentagon and its diagonals are AD, AC, BE and BD.

EXERCISE-5.9

Question 1.Match the following:
(a)Cone

(b)Sphere

(c)Cylinder

(d)Cuboid

(e)Pyramid

Give two example of each shape.

Answer: Sol.
(a)one

(b)Sphere

(c)Cylinder

(d)Cuboid

(e)Pyramid

Question 2.What shape is:
(a) Your instrument box?

(b) A brick?

(c) A match box?

(d) A road-roller?

(e) A sweet laddu?

Answer:
(a) Cuboid

(b) Cuboid

(c) Cuboid

(d) Cylinder

(e) Sphere

Activity- Draw different polygons with the help matchsticks

LESSON-6

INTEGERS

*SUMMARY

> INTRODUCTION

> INTEGERS

> REPRESENTATION OF INTEGERS ON A NUMBER LINE

> ADDITION OF INTEGERS ON A NUMBER LINE

INTEGERS

Integers are a set of numbers that include all the natural numbers (0, 1, 2 ,3 , 4, and so on) and their negatives. **Integers** include positive and negative numbers and zero (zero is neither positive or negative). ... -11, -10, -9, -8, -7, **-6**, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, **6**, 7, 8, 9, 10, 11, ..

EXERCISE-6.1

Question 1.Write opposite of the following:
(a) Increase in weight

(b) 30 km north

(c) 326 BC

(d) Loss of Rs. 700

(e) 100 m above sea level

Answer:
(a) Decrease in weight

(b) 30 km south

(c) 326 AD

(d) Profit of Rs. 700

(e) 100 m below sea level

Question 2 .Represent the following numbers as integers with appropriate signs.
(a)An aeroplane is flying at a height two thousand meters above the ground.

(b)A submarine is moving at a depth eight thousand meters below the sea level.

(c)A deposit of rupees two hundred.

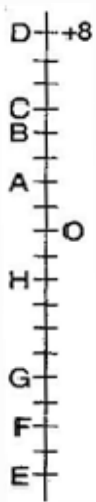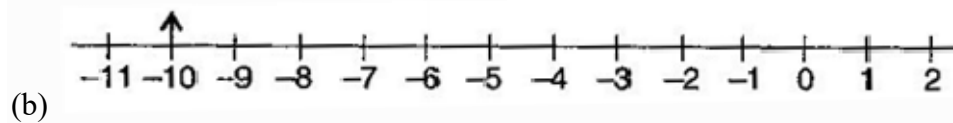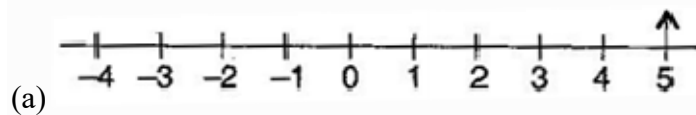(d)Withdrawal of rupees seven hundred.

Answer:
(a) (+) 200 meters

(b) (−) 800 meters

(c) (+) 200 Rupees

(d) (−) 700 Rupees

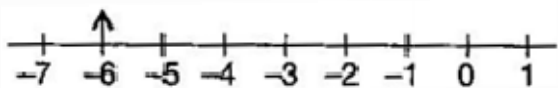**Question 3.Represent the following numbers on number line:**
(a) +5

(b) −10

(c) +8

(d) −1

(e) −6

Answer:

(a)

(b)
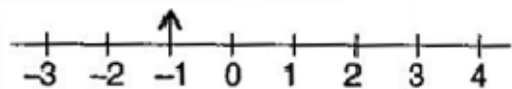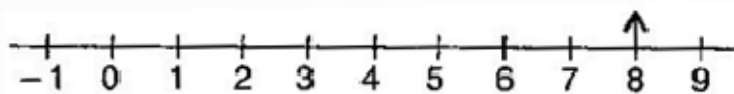
Question 4.Adjacent figure is a vertical number line, representing integers. Observe it and locate the following points:
(a)If point D is +8 then which point is –8?

(b)Is point G a negative integer or a positive integer?

(c)Write integers for points B and E.

(d)Which point marked on this number line has the least value?

(e)Arrange all the points in decreasing order of values.

Answer:
(a) F

(b) Negative

(c) B = (+) 4; E = (–) 10

(d) E

(e) D, C, B, A, O, H, G, F, E

Question 5.Following is the list of temperatures of five places in India, on a particular day of the year.

Place	Temperature	
Siachin	10∘∘ C below 0∘∘C	_____
Shimla	2∘∘C below 0∘∘C	_____
Ahmedabad	30∘∘C above 0∘∘C	_____
Delhi	20∘∘C above 0∘∘C	_____
Srinagar	5∘∘C below 0∘∘C	_____

(a)Write the temperature of these places in the form of integers in the blank column.

(b)Following is the number line representing the temperature in degree Celsius.

Plot the name of the city against its temperature.

(a)Which is the coolest place?

(b)Write the names of the place where temperature are above 10oC.

Answer:
(a)

Place	Temperature
Siachen	(-) 10∘∘C
Shimla	(−) 2∘∘C
Ahmedabad	(+) 30∘∘C

Delhi	(+) 20∘∘C
Srinagar	(−) 5∘∘C

(b)Number line

(c)Siachin

(d)Ahmedabad, Delhi

Question 6.In each of the following pairs, which number is to the right of the other on the number line?
(a) 2, 9

(b) −3, −8

(c) 0, −1

(d) −11, 10

(e) −6, 6

(f) 1, −100

Answer:
(a) 9 is right to 2

(b) −3 is right to −8

(c) 0 is right to −1

(d) 10 is right to −11

(e) 6 is right to −6

(f) 1 is right to −100

Question 7.Write all the integers between the given pairs (write them in the increasing order):

(a) 0 and –7

(b) –4 and 4

(c) –8 and –15

(d) –30 and –23

Answer:

(a) –6, –5, –4, –3, –2, –1

(b) –3, –2, –1, 0, 1, 2, 3

(c) –14, –13, –12, –11, –10, –9

(d) –29, –28, –27, –26, –25, –24

Question 8.

(a) Write four negative integers greater than –20.

(b) Write four negative integers less than –10.

Answer:

(a) –19, –18, –17, –16

(b) –11, –12, –13, –14

Question 9.For the following statements write True (T) or False (F). If the statement is false, correct the statement:

(a)–8 is to the right of –10 on a number line.

(b)–100 is the right of –50 on a number line.

(c)Smallest negative integer is –1.

(d)–26 is larger than –25.
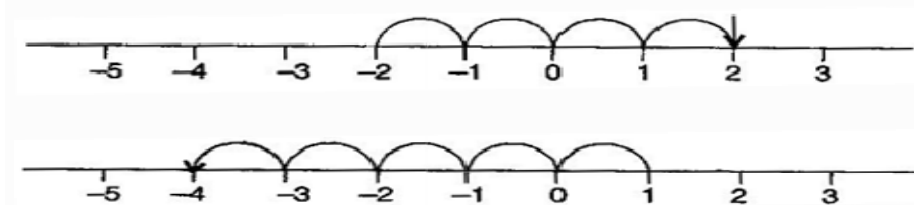
Answer:

(a) True

(b) False

(c) False

(d) False

Question 10.Draw a number line and answer the following:
(a)Draw a number line will we reach if we move 4 numbers to the right of –2.

(b)Which number will we reach if we move 5 numbers to the left of 1.

(c)If we are at –8 on the number line, in which direction should we move to reach –13?

(d)If we are at –6 on the number line, in which direction should we move to reach –1?

Answer:
(a)

(c) On left side

(d) On right side

EXERCISE-6.2

Question 1.Using the number line write the integer which is:
(a) 3 more than 5

(b) 5 more than –5

(c) 6 less than 2

(d) 3 less than –2

Answer:
(a) 8

(b) 0
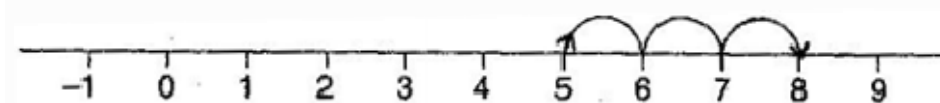
(c) –4

(d) –5

Question 2.Use number line and add the following integers:
(a) 9 + (–6)

(b) 5 + (–11)

(c) (–1) + (–7)

(d) (–5) + 10

(e) (–1) + (–2) + (–3)

(f) (–2) + 8 + (–4)

Answer:
(a) 9 + (–6) = 3
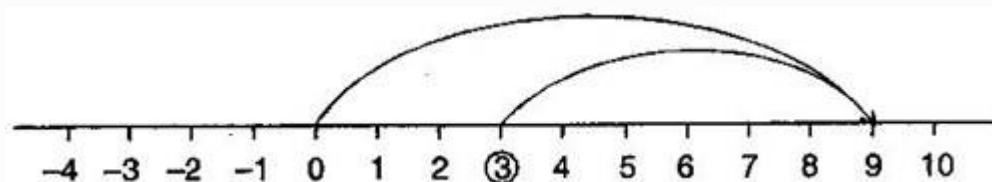
(b) 5 + (–11) = –6

(c) (–1) + (–7) = –8

(d) (–5) + 10 = 5

(e)(–1) + (–2) + (–3) = –6

(f)(–2) + 8 + (–4) = 2

Question 3.Add without using number line:
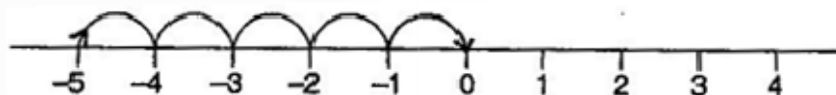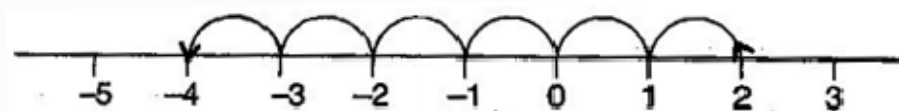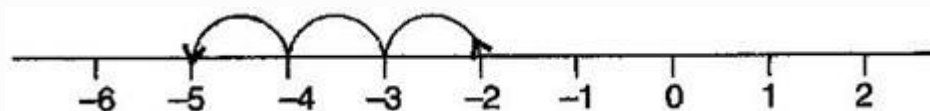
(a) 11 + (−7)

(b) (−13) + (+18)

(c) (−10) + (+19)

(d) (−250) + (+150)

(e) (−380) + (−270)

(f) (−217) + (−100)

Answer:

(a) 11 + (−7) = 11 − 7 = 4

(b) (−13) + 18 = 5

(c) (−10) + (+19) = −10 + 19 = 9

(d) (−250) + (+150) = −250 + 150 = −100

(e) (−380) + (−270) = −380 − 270 = −650

(f) (−217) + (−100) = −217 v 100 = −317

Question 4.Find the sum of:

(a) 137 and −354

(b) −52 and 52

(c) −213, 39 and 192

(d) −50, −200 and 300

Answer:

(a) 137 + (−354) = 137 − 354 = −217

(b) (−52) + 52 = 0

(c) (−312) + 39 + 192 = −312 + 231 = −81

(d) (−50) + (−200) + 300 = −50 − 200 + 300 = −250 + 300 = 50

Question 5.Find the value of:

(a)(–7) + (–9) + 4 + 16

(b)37 + (–2) + (–65) + (–8)

Answer:

(a) (–7) + (–9) + 4 + 16

= –7 – 9 + 4 + 16

= –16 + 20

= 4

(b) 37 + (–2) + (–65) + (–8)

= 37 – 2 – 65 – 8

= 37 – 75

= –38

EXERCISE-6.3

Question 1Subtract:

(a) 35 – (20)

(b) 72 – (90)

(c) (–15) – (–18)

(d) (–20) – (13)

(e) 23 – (–12)

(f) (–32) – (–40)

Answer:

(a) 35 – 20 = 15

(b) 72 – 90 = –18

(c) $(-15) - (-18) = -15 + 18 = 3$

(d) $-20 - (13) = -20 - 13 = -33$

(e) $23 - (-12) = 23 + 12 = 35$

(f) $(-32) - (-40) = -32 + 40 = 8$

Question 2.Fill in the blanks with >, < or = sign:
(a)$(-3) + (-6)$ _____ $(-3) - (-6)$

(b)$(-21) - (-10)$ _____ $(-31) + (-11)$

(c)$45 - (-11)$ _____ $57 + (-4)$

(d)$(-25) - (-42)$ _____ $(-42) - (-25)$

Answer:
(a) $(-3) + (-6) << (-3) - (-6)$
(b) $(-21) - (-10) >> (-31) + (-11)$
(c) $45 - (-11) >> 57 + (-4)$
(d) $(-25) - (-42) >> (-42) - (-25)$

Question 3.Fill in the blanks:
(a)$(-8) +$ _____ $= 0$

(b)$13 +$ _____ $= 0$

(c)$12 + (-12) =$ _____

(d)$(-4) +$ _____ $= -12$

(e)_____ $- 15 = -10$

Answer:
(a) $(-8) + 8 = 0$

(b) $13 + (-13) = 0$

(c) $12 + (-12) = 0$

(d) $(-4) + (-8) = -12$

(e) $5 - 15 = -1$

Question 4.Find:

(a)(–7) – 8 – (–25)

(b)(–13) + 32 – 8 – 1

(c)(–7) + (–8) + (–90)

(d)50 – (–40) – (–2)

Answer:
(a) (–7) – 8 – (–25)

= –7 – 8 + 25

= –15 + 25

= 10

(b) (–13) + 32 – 8 – 1

= –13 + 32 – 8 – 1

= 32 – 22

= 10

(c) (–7) + (–8) + (–90)

= –7 – 8 – 90

= –105

(d) 50 – (–40) – (–2)

= 50 + 40 + 2

= 92

Activity- Draw number line represent positive and negative integers on it.

LESSON-7

FRACTIONS

*SUMMARY

- ➢ **INTRODUCTION**

- ➢ **FRACTION ON THE NUMBER LINE**

- ➢ **PROPER FRACTION**

- ➢ **IMPROPER AND MIXED FRACTION**

- ➢ **EQUIVALENT FRACTIONS**

- ➢ **SIMPLEST FORM OF A FRACTION**

- ➢ **COMPARING FRACTION**

- ➢ **ADDITION AND SUBTRACTION OF FRACTIONS**

Proper, **Improper and Mixed Fractions**. There are three typesof **fractions**: **Proper fraction** - where the numerator is less than the denominator. **Improper fraction** - where the numerator is greater than the denominator. **Mixed fraction** - consists of a **whole number** and a **proper fraction**.

EXERCISE-7.1

Question 1.Write the fraction representing the shaded portion:

Answer:
(i)2/4
(ii)8/9
(iii)4/8
(iv)1/4
(v)3/7
(vi)3/12
(vii)10/10
(viii)4/9
(ix)4/8
(x)1/2

Question 2.Colour the part according to the given fraction:
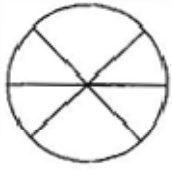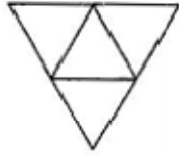
(i) $\frac{1}{6}$ (ii) $\frac{1}{4}$ (iii) $\frac{1}{3}$

(iv) $\frac{3}{4}$ (v) $\frac{4}{9}$

Answer:

(i)   (ii)   (iii)

(iv)   (v)
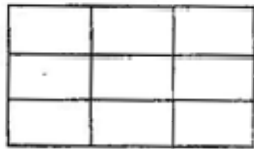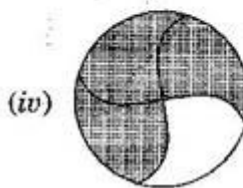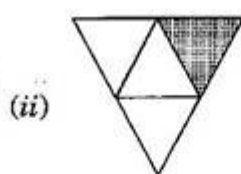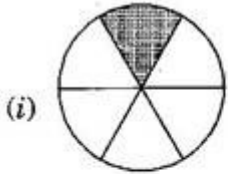
Question 3.Identify the error, if any?
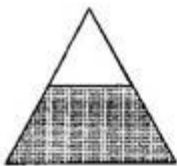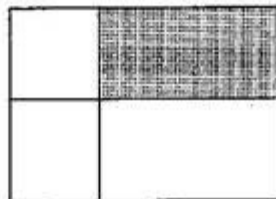
This is 1/2   This is 1/4   This is 3/4

Answer:
All the figures are not equally divided. For making fractions, it is necessary that figure is to be divided in equal parts.

Question 4.What fraction of a day is 8 hours?
Answer:
Since, 1 day = 24 hours.

Therefore, the fraction of 8 hours = 8/24=1/3

Question 5.What fraction of an hour is 40 minutes?
Answer:
Since, 1 hour = 60 minutes.

Therefore, the fraction of 40 minutes = 40/60=2/3

Question 6.Arya, Abhimanyu and Vivek shared lunch. Arya has brought two sandwiches, one made of vegetable and one of jam. The other two boys forgot to bring their lunch. Arya agreed to share his sandwiches so that each person will have an equal share of each sandwich.
(a)How can Arya divide his sandwiches so that each person has an equal share?

(b)What part of a sandwich will each boy receive?

Answer:
(a) Arya will divide each sandwich into three equal parts and give one part of each sandwich to

each one of them.

(b) 1/3

Question 7.Kanchan dyes dresses. She had to dye 30 dresses. She has so far finished 20 dresses. What fraction of dresses has she finished?
Answer:
Total number of dresses = 30

Work finished = 20

Fraction of finished work = $\frac{20}{30}=\frac{2}{3}$

Question 8.Write the natural numbers from 2 to 12. What fraction of them are prime numbers?
Answer:
Natural numbers from 2 to 12: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Prime numbers from 2 to 12: 2, 3, 5, 7, 11

Hence, fraction of prime numbers 5/11

Question 9.Write the natural numbers from 102 to 113. What fraction of them are prime numbers?
Answer:
Natural numbers from 102 to 113: 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113

Prime numbers from 102 to 113: 103, 107, 109, 113

Hence fraction of prime numbers $= \dfrac{4}{12} = \dfrac{1}{3}$

Question 10.What fraction of these circles have 'X's in them?

Answer:
Total number of circles = 8 and number of circles having 'X' = 4

Hence, the fraction $= \dfrac{4}{8}$

Question 11.Kristin received a CD player for her birthday. She bought 3 CDs and received 5 others as gifts. What fraction of her total CDs did she buy and what fraction did she receive as gifts?
Answer:
Total number of CDs = 3 + 5 = 8

Number of CDs purchased = 3

Fraction of CDs purchased $= \dfrac{3}{8}$
Fraction of CDs received as gifts $= \dfrac{5}{8}$

EXERCISE-7.2

uestion 1.Draw number lines and locate the points on them:
(a)1/2 ,1/4 ,3/4 ,4/4

(b)1/8, 2/8,3/8,7/8

(c)2/5,3/5,8/5,4/5

Answer:
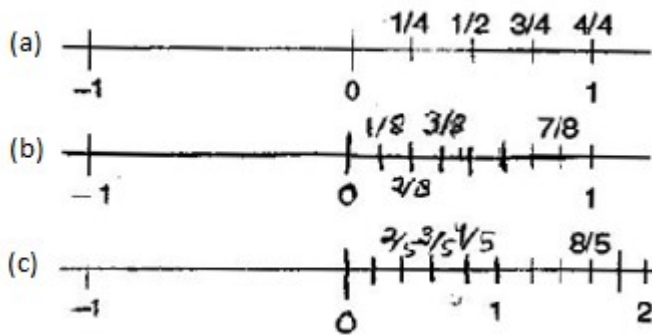
Question 2.Express the following fractions as mixed fractions:

(a)$\frac{20}{3}$

$6\frac{2}{3}$

(b)$\frac{11}{5}$

$2\frac{1}{5}$

(c)$\frac{17}{7}$

$2\frac{3}{7}$

(d)$\frac{28}{5}$

$5\frac{3}{5}$

(e)$\frac{19}{6}$

$3\frac{1}{6}$

(f)$\frac{35}{9}$

$3\frac{8}{9}$

Question 3.Express the following as improper fractions:

(a) $7\frac{3}{4} - \frac{31}{4}$

b) $5\frac{6}{7} - \frac{41}{7}$

c) $2\frac{5}{6} - \frac{17}{6}$

d) $10\frac{3}{5} - \frac{53}{5}$

e) $9\frac{3}{7} - \frac{66}{7}$

f) $8\frac{4}{9} - \frac{76}{9}$

EXERCISE-7.3

estion 1.Write the fractions. Are all these fractions equivalent:

(a)
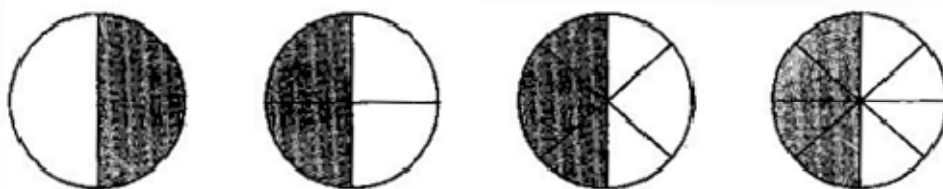
(b)
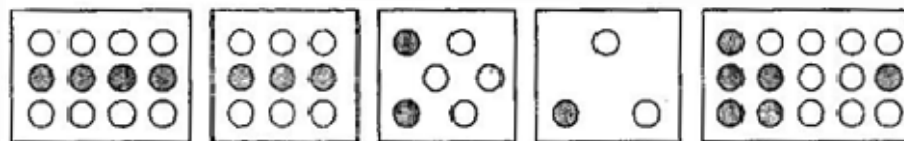
Answer:

(a) $\frac{1}{2},\frac{2}{4},\frac{3}{6},\frac{4}{8}$

Yes, all of these fractions are equivalent.

(b) $\frac{4}{12}, \frac{3}{9}, \frac{2}{6}, \frac{1}{3}, \frac{6}{15}$

No, these fractions are not equivalent.

Question 2.Write the fraction and pair up the equivalent fractions to each row:

(a)   (b)   (c)   (d)   (e)

(i)   (ii)   (iii)   (iv)   (v)
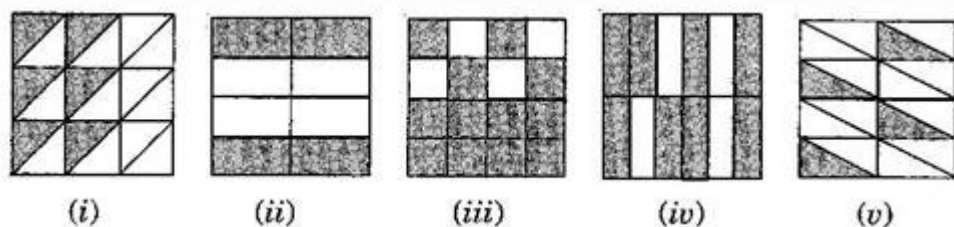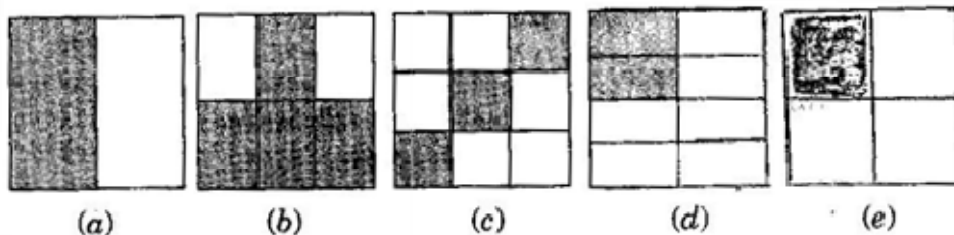
Answer:

(a) $\frac{1}{2}$

(ii) $\frac{4}{8} = \frac{1}{2}$

(b) $\frac{4}{6} = \frac{2}{3}$

(iv) $\frac{8}{12} = \frac{2}{3}$

(c) $\frac{3}{9} = \frac{1}{3}$

(i) $\frac{6}{18} = \frac{1}{3}$

(d) $\frac{2}{8} = \frac{1}{4}$

(v) $\frac{4}{16} = \frac{1}{4}$

(e) $\frac{3}{4}$

(iii) $\frac{12}{16} = \frac{3}{4}$

Question 3.Replace in each of the following by the correct number:

(a) $\frac{2}{7} = \frac{2x4}{7x4} = \frac{8}{28}$ (b) $\frac{5}{8} = \frac{5x2}{8x2} = \frac{10}{16}$ c) $\frac{3}{5} = \frac{3x4}{5x4} \frac{12}{20}$ (d) $\frac{45}{60} = \frac{45\div3}{60\div3} = \frac{15}{20}$

e) $\frac{18}{24} = \frac{18\div6}{24\div6} = \frac{3}{4}$

Question 4.Find the equivalent fraction of $\frac{3}{5}$ having:

(a) denominator 20

(b) numerator 9

(c) denominator 30

(d) numerator 27

Answer. (a) $\frac{3}{5} = \frac{\square}{20}$

$3 * 20 = 5 * \square$

$3 * 2 * 2 * 5 = 5 * \square$

$12 = \square$

Hence, the required fraction is $\frac{12}{20}$

(b) $\frac{3}{5} = \frac{9}{\square}$

$3 * \square = 5 * 9$

$3 * \square = 5 * 3 * 3$

$\square = 15$

Hence, the required fraction is $\frac{9}{15}$

(c) $\frac{3}{5} = \frac{\square}{30}$

$3 * 30 = 5 * \square$

$3 * 2 * 3 * 5 = 5 * \square$

$18 = \square$

Hence, the required fraction is $\frac{18}{30}$

(d) $\frac{3}{5} = \frac{27}{\square}$

$3 * \square = 5 * 27$

$3 * \square = 5 * 3 * 3 * 3$

$\square = 45$

Hence, the required fraction is $\frac{27}{45}$

Q5 Find the equivalent fraction of $\frac{36}{48}$ with

(a) numerator 9
(b) denominator 4

Answer. (a) $\frac{36}{48} = \frac{9}{\square}$

$36 * \square = 48 * 9$

$3 * 3 * 2 * 2 * \square = 2 * 2 * 2 * 2 * 3 * 3 * 3$

$\square = 12$

Hence, the required fraction is $\frac{9}{12}$

(b) $\frac{36}{48} = \frac{\square}{4}$

$36 * 4 = 48 * \square$

$3 * 3 * 2 * 2 * 2 * 2 = 2 * 2 * 2 * 2 * 3 * \square$

$3 = \square$

Hence, the required fraction is $\frac{3}{4}$

Q6 Check whether the given fractions are equivalent :

(a) $\frac{5}{9}$, $\frac{30}{54}$

(b) $\frac{3}{10}$, $\frac{12}{50}$

(c) $\frac{7}{13}$, $\frac{5}{11}$

Answer. (a) $\frac{5}{9}$, $\frac{30}{54}$

$$\frac{30}{54} = \frac{5*6}{9*6} = \frac{5}{9}$$

Clearly, both the fractions are equivalent.

(b) $\frac{3}{10}$, $\frac{12}{50}$

$$\frac{3}{10} = \frac{3*2}{10*2} = \frac{6}{20}$$

$$\frac{12}{50} = \frac{6*2}{25*2} = \frac{6}{25}$$

Clearly, both the fractions are not equivalent.

(c) $\frac{7}{13}$, $\frac{5}{11}$

$$\frac{7}{13} = \frac{7*11}{13*11} = \frac{77}{143}$$

$$\frac{5}{11} = \frac{5*13}{11*13} = \frac{65}{143}$$

Clearly, both the fractions are not equivalent.

Question 7. Reduce the following fractions to simplest form:

(a) $\frac{48}{60}$

(b) $\frac{150}{60}$

(c) $\frac{84}{98}$

(d) $\frac{12}{52}$

(e) $\frac{7}{28}$

Answer:

(a) $\frac{48}{60} = \frac{2 \times 2 \times 2 \times 2 \times 3}{2 \times 2 \times 3 \times 5} = \frac{4}{5}$

(b) $\frac{150}{60} = \frac{3 \times 5 \times 10}{2 \times 3 \times 10} = \frac{5}{2}$

(c) $\frac{84}{98} = \frac{2 \times 3 \times 14}{7 \times 14} = \frac{6}{7}$

(d) $\frac{12}{52} = \frac{2 \times 2 \times 3}{2 \times 2 \times 13} = \frac{3}{13}$

(e) $\frac{7}{28} = \frac{7}{2 \times 2 \times 7} = \frac{1}{4}$

Question 8. Ramesh had 20 pencils, Sheelu had 50 pencils and Jamaal had 80 pencils. After 4 months, Ramesh used up 10 pencils, Sheelu used up 25 pencils and Jamaal used up 40 pencils. What fraction did each use up. Check is each has used up an equal fraction of her/his pencils?

Answer:

Ramesh: Total pencils = 20

Pencils used = 10

Fraction = $\frac{10}{20} = \frac{1}{2}$

Sheelu: Total pencils = 50

Pencils used = 25

Fraction = $\frac{25}{50} = \frac{1}{2}$

Jamaal: Total pencils = 80

Pencils used = 40

Fraction = $\frac{40}{80} = \frac{1}{2}$

Since, all of them used half of their pencils, therefore each one used up equal fraction of pencils.

Question 9. Match the equivalent fractions and write two more for each:

(i) $\frac{250}{400}$	(a) $\frac{2}{3}$
(ii) $\frac{180}{200}$	(b) $\frac{2}{5}$
(iii) $\frac{660}{990}$	(c) $\frac{1}{2}$
(iv) $\frac{180}{360}$	(d) $\frac{5}{8}$
(v) $\frac{220}{550}$	(e) $\frac{9}{10}$

Answer:

(i) $\frac{250}{400} = \frac{5}{8}, \frac{10}{16}, \frac{15}{24}$

(d) $\frac{5}{8}$

(ii) $\frac{180}{200} = \frac{9}{10}, \frac{18}{20}, \frac{27}{30}$

(e) $\frac{9}{10}$

(iii) $\frac{660}{990} = \frac{2}{3}, \frac{4}{6}, \frac{6}{9}$

(a) $\frac{2}{3}$

(iv) $\frac{180}{360} = \frac{1}{2}, \frac{2}{4}, \frac{3}{6}$

(c) $\frac{1}{2}$

    1. $\frac{220}{550} = \frac{2}{5}, \frac{4}{10}, \frac{6}{15}$

(b) $\frac{2}{5}$

EXERCISE-7.4

Question 1.Write shaded portion as fraction. Arrange them in ascending and descending order using correct sign '<', '>', '=' between the fractions:
(a)

(b)

c)

Show $\frac{2}{6}, \frac{4}{6}, \frac{8}{6}$ and $\frac{6}{6}$ on the number line. Put appropriate signs between the fractions given:

$\frac{5}{6} \square \frac{2}{6}, \frac{3}{6} \square 0,$

$\frac{1}{6} \square \frac{6}{6}, \frac{8}{6} \square \frac{5}{6}$

Answer:

(a) $\frac{3}{8}, \frac{6}{8}, \frac{4}{8}, \frac{1}{8}$

Ascending order: $\frac{1}{8} < \frac{3}{8} < \frac{4}{8} < \frac{6}{8}$

Descending order: $\frac{6}{8} > \frac{4}{8} > \frac{3}{8} > \frac{1}{8}$

(b) $\frac{8}{9}, \frac{4}{9}, \frac{3}{9}, \frac{6}{9}$

Ascending order: $\frac{3}{9} < \frac{4}{9} < \frac{6}{9} < \frac{8}{9}$

Descending order: $\frac{8}{9} > \frac{6}{9} > \frac{4}{9} > \frac{3}{9}$

(c) Number line
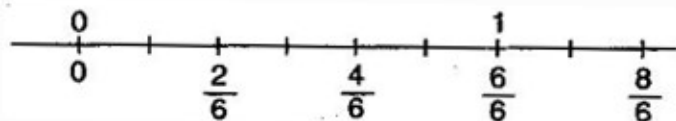
$\frac{5}{6}$ $\boxed{>}$ $\frac{2}{6}$ $\frac{1}{6}$ $\boxed{<}$ $\frac{6}{6}$

$\frac{3}{6}$ $\boxed{>}$ $\frac{0}{6}$ $\frac{8}{6}$ $\boxed{>}$ $\frac{5}{6}$

Question 2. Compare the fractions and put an appropriate sign:

(a) $\frac{3}{6} \square \frac{5}{6}$

(b) $\frac{1}{7} \square \frac{1}{4}$

(c) $\frac{4}{5} \square \frac{5}{5}$

(d) $\frac{3}{5} \square \frac{3}{7}$

Answer:

(a) $\frac{3}{6} \boxed{<} \frac{5}{6}$

(b) $\frac{1}{7} \boxed{<} \frac{1}{4}$

(c) $\frac{4}{5} \boxed{<} \frac{5}{5}$

(d) $\frac{3}{5} \boxed{>} \frac{3}{7}$

Question 3. Make five more each pairs and put appropriate signs.

Answer:

(a) $\dfrac{9}{10}$ $\boxed{>}$ $\dfrac{6}{10}$

(b) $\dfrac{1}{3}$ $\boxed{>}$ $\dfrac{1}{6}$

(c) $\dfrac{1}{8}$ $\boxed{<}$ $\dfrac{1}{5}$

(d) $\dfrac{7}{8}$ $\boxed{<}$ $\dfrac{11}{8}$

(e) $\dfrac{11}{13}$ $\boxed{>}$ $\dfrac{9}{13}$

Question 4. Look at the figures and write '<' or '>' between the given pairs of fractions:
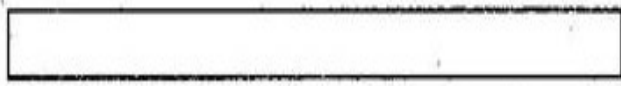
Date-_____

$\frac{0}{1}$ $\frac{1}{1}$
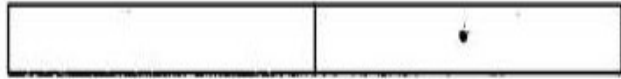
$\frac{0}{2}$ $\frac{1}{2}$ $\frac{2}{2}$
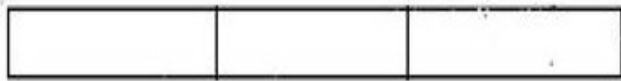
$\frac{0}{3}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{3}{3}$
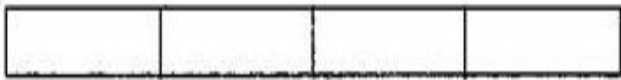
$\frac{0}{4}$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ $\frac{4}{4}$

$\frac{0}{5}$ $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$ $\frac{5}{5}$

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$ $\frac{5}{6}$ $\frac{6}{6}$

Page-55
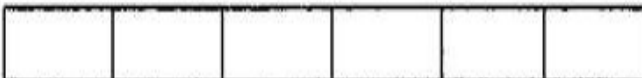
(a) $\frac{1}{6} \square \frac{1}{3}$

(b) $\frac{3}{4} \square \frac{2}{6}$

(c) $\frac{2}{3} \square \frac{2}{4}$

(d) $\frac{6}{6} \square \frac{3}{3}$

(e) $\frac{5}{6} \square \frac{5}{5}$

Make five more such problems and solve them with your friends.

Answer:

(a) $\frac{1}{6} \boxed{<} \frac{1}{3}$

(b) $\frac{3}{4} \boxed{>} \frac{2}{6}$

(c) $\frac{2}{3} \boxed{>} \frac{2}{4}$

(d) $\frac{6}{6} \boxed{=} \frac{3}{3}$

(e) $\frac{5}{6} \boxed{<} \frac{5}{5}$

Five more such problems:

(a) $\frac{1}{2} \square \frac{3}{6}$

(b) $\frac{2}{3} \square \frac{3}{5}$

(c) $\frac{3}{4} \square \frac{4}{6}$

(d) $\frac{5}{6} \square \frac{2}{2}$

(e) $\frac{0}{1} \square \frac{0}{6}$

Sol.

(a) $\frac{1}{2} \boxed{=} \frac{3}{6}$

(b) $\frac{2}{3} \boxed{>} \frac{3}{5}$

(c) $\frac{3}{4} \boxed{>} \frac{4}{6}$

(d) $\frac{5}{6} \boxed{<} \frac{2}{2}$

(e) $\frac{0}{1} \boxed{=} \frac{0}{6}$

Question 5. How quickly can you do this? Fill appropriate sign (<, =, >):

(a) $\frac{1}{2} \square \frac{1}{5}$

(b) $\frac{2}{4} \square \frac{3}{6}$

c) $\dfrac{3}{5} \square \dfrac{2}{3}$

d) $\dfrac{3}{4} \square \dfrac{2}{8}$

e) $\dfrac{3}{5} \square \dfrac{6}{5}$

f) $\dfrac{7}{9} \square \dfrac{3}{9}$

g) $\dfrac{1}{4} \square \dfrac{2}{8}$

h) $\dfrac{6}{10} \square \dfrac{4}{5}$

i) $\dfrac{3}{4} \square \dfrac{7}{8}$

j) $\dfrac{6}{10} \square \dfrac{4}{5}$

k) $\dfrac{5}{7} \square \dfrac{15}{21}$

Answer:

a) $\dfrac{1}{2} \boxed{>} \dfrac{1}{5}$

b) $\dfrac{2}{4} \boxed{=} \dfrac{3}{6}$

(c) $\frac{3}{5}$ $\boxed{<}$ $\frac{2}{3}$

(d) $\frac{3}{4}$ $\boxed{>}$ $\frac{2}{8}$

(e) $\frac{3}{5}$ $\boxed{<}$ $\frac{6}{5}$

(f) $\frac{7}{9}$ $\boxed{>}$ $\frac{3}{9}$

(g) $\frac{1}{4}$ $\boxed{=}$ $\frac{2}{8}$

(h) $\frac{6}{10}$ $\boxed{<}$ $\frac{4}{5}$

(i) $\frac{3}{4}$ $\boxed{<}$ $\frac{7}{8}$

(j) $\frac{6}{10}$ $\boxed{<}$ $\frac{4}{5}$

(k) $\frac{5}{7}$ $\boxed{=}$ $\frac{15}{21}$

Question 6. The following fractions represent just three different numbers. Separate them into three groups of equivalent fractions, by changing each one to its simplest form:

(a) $\frac{2}{12}$

(b) $\frac{3}{15}$

(c) $\frac{8}{50}$

(d) $\frac{16}{100}$

(e) $\frac{10}{60}$

(f) $\frac{15}{75}$

(g) $\frac{12}{60}$

(h) $\frac{16}{96}$

(i) $\frac{12}{75}$

(j) $\frac{12}{72}$

(k) $\frac{3}{18}$

(l) $\frac{4}{25}$

Answer:

(a) $\frac{2}{12} = \frac{1}{6}$

(b) $\frac{3}{15} = \frac{1}{5}$

(c) $\frac{8}{50} = \frac{4}{25}$

(d) $\dfrac{16}{100} = \dfrac{4}{25}$

(e) $\dfrac{10}{60} = \dfrac{1}{6}$

(f) $\dfrac{15}{75} = \dfrac{1}{5}$

(g) $\dfrac{12}{60} = \dfrac{1}{5}$

(h) $\dfrac{16}{96} = \dfrac{1}{6}$

(i) $\dfrac{12}{75} = \dfrac{4}{25}$

(j) $\dfrac{12}{72} = \dfrac{1}{6}$

(k) $\dfrac{3}{18} = \dfrac{1}{6}$

(l) $\dfrac{4}{25} = \dfrac{4}{25}$

Equivalent groups:

I group: $\dfrac{1}{5}$ [(b), (f), (g)]

II group: $\dfrac{1}{6}$ [(a), (e), (h), (j), (k)]

III group: $\dfrac{4}{25}$ [(c), (d), (i), (l)]

Question 7. Find answers to the following. Write and indicate how you solved them:

(a) Is $\frac{5}{9}$ equal to $\frac{4}{5}$?

(b) Is $\frac{9}{16}$ equal to $\frac{5}{9}$?

(c) Is $\frac{4}{5}$ equal to $\frac{16}{20}$?

(d) Is $\frac{1}{15}$ equal to $\frac{4}{30}$?

Answer:

(a) $\frac{5}{9}$ and $\frac{4}{5}$

$\Rightarrow \frac{5 \times 5}{9 \times 5} = \frac{25}{45}$ and $\frac{4 \times 9}{5 \times 9} = \frac{36}{45}$ [$\because$ L.C.M. of 9 and 5 is 45]

Since, $\frac{25}{45} \neq \frac{36}{45}$

Therefore, $\frac{5}{9} \neq \frac{4}{5}$

(b) $\frac{9}{16}$ and $\frac{5}{9}$

$\Rightarrow \frac{9 \times 9}{16 \times 9} = \frac{81}{144}$ and $\frac{5 \times 16}{9 \times 16} = \frac{80}{144}$ [∵ L.C.M. of 16 and 9 is 144]

Since, $\frac{81}{144} \neq \frac{80}{144}$

Therefore, $\frac{9}{16} \neq \frac{5}{9}$

(c) $\frac{4}{5}$ and $\frac{16}{20}$

$\Rightarrow \frac{4 \times 20}{5 \times 20} = \frac{80}{100}$ and $\frac{16 \times 5}{20 \times 5} = \frac{80}{100}$ [∵ L.C.M. of 5 and 20 is 100]

Since, $\frac{80}{100} = \frac{80}{100}$

Therefore, $\frac{4}{5} = \frac{16}{20}$

(d) $\frac{1}{15}$ and $\frac{4}{30}$

$\Rightarrow \frac{1 \times 2}{15 \times 2} = \frac{2}{30}$ and $\frac{4 \times 1}{30 \times 1} = \frac{4}{30}$ [∵ L.C.M. of 15 and 30 is 30]

Since, $\frac{4}{30} = \frac{4}{30}$ Therefore,

$\frac{1}{15} = \frac{4}{30}$

Question 8. Ila read 25 pages of a book containing 100 pages. Lalita read $\frac{2}{5}$ of the same book. Who read less?

Answer:

Ila read 25 pages out of 100 pages.

Fraction of reading the pages = $\frac{25}{100} = \frac{1}{4}th$ part of book

Lalita read $\frac{2}{5}th$ part of book = $\frac{40}{100}$ pages

Since $\frac{1}{4} < \frac{2}{5}$

Therefore, Ila read less.

Question 9.Rafiq exercised for $\frac{3}{6}$ of an hour, while Rohit exercised for $\frac{3}{4}$ of an hour. Who exercised for a longer time?

Answer:

Rafiq exercised $\frac{3}{6}$ of an hour.

Rohit exercised $\frac{3}{4}$ of an hour.

Since $\frac{3}{4} > \frac{3}{6}$

Therefore, Rohit exercised for a longer time.

Question 10. In a class A of 25 students, 20 passed in first class; in another class B of 30 students, 24 passed in first class. In which class was a greater fraction of students getting first class?
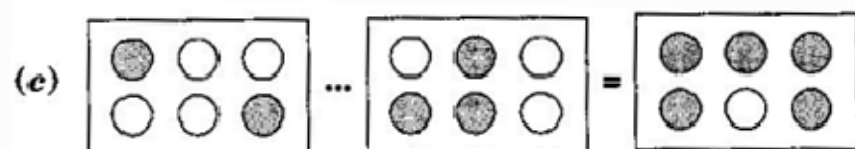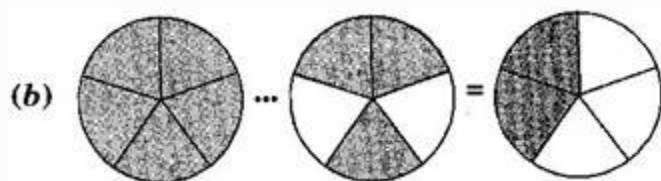
Answer:

In class A, 20 passed out of 25, i.e., $\frac{20}{25} = \frac{4}{5}$

In class B, 24 passed out of 30, i.e., $\frac{24}{30} = \frac{4}{5}$

Hence, each class have same fraction of student getting first class.

EXERCISE-7.5

Question 1.Write the fractions appropriately as additions or subtractions

(a)

(b)

(c)

Answer:

(a) $\frac{1}{5} + \frac{2}{5} = \frac{1+2}{5} = \frac{3}{5}$

(b) $\frac{5}{5} - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$

(c) $\frac{2}{6} + \frac{3}{6} = \frac{2+3}{6} = \frac{5}{6}$

QUESTION-2 Solve

(a) $\frac{1}{18} + \frac{1}{18} = \frac{1+1}{18} = \frac{2}{18} = \frac{1}{9}$

(b) $\frac{8}{15} + \frac{3}{15} = \frac{8+3}{15} = \frac{11}{15}$

(c) $\frac{7}{7} - \frac{5}{7} = \frac{7-5}{7} = \frac{2}{7}$

(d) $\frac{1}{22} + \frac{21}{22} = \frac{1+21}{22} = \frac{22}{22} = 1$

(e) $\frac{12}{15} - \frac{7}{15} = \frac{12-7}{15} = \frac{5}{15} = \frac{1}{3}$

(f) $\frac{5}{8} + \frac{3}{8} = \frac{8}{8} = 1$

(g) $1 - \frac{2}{3} = \frac{3}{3} - \frac{2}{3} = \frac{3-2}{2} = \frac{1}{3}$

(h) $\frac{1}{4} + \frac{0}{4} = \frac{1+0}{4} = \frac{1}{4}$

(i) $3 - \frac{12}{5} = \frac{15}{5} - \frac{12}{5} = \frac{15-12}{5} = \frac{3}{5}$

Question 3. Shubham painted $\frac{2}{3}$ of the wall space in his room. His sister Madhavi helped and painted $\frac{1}{3}$ of the wall space. How much did they paint together?

Answer:

Fraction of wall painted by Shubham = $\frac{2}{3}$

Fraction of wall painted by Madhavi = $\frac{1}{3}$

Total painting by both of them = $\frac{2}{3} + \frac{1}{3} = \frac{2+1}{3} = \frac{3}{3} = 1$

Therefore, they painted complete wall.

Question 4. Fill in the missing fractions:

(a) $\frac{7}{10} - \square = \frac{3}{10}$

(b) $\square - \frac{3}{21} = \frac{5}{21}$

(c) $\square - \frac{3}{6} = \frac{3}{6}$

(d) $\square + \frac{5}{27} = \frac{12}{27}$

Answer:

(a) $\frac{4}{10}$

(b) $\frac{8}{21}$

(c) $\frac{6}{6}$

(d) $\frac{7}{27}$

Question 5.Javed was given of a basket of oranges. What fraction of oranges was left in the basket?

Answer:

Total = 1

Fraction of Orange left = $1 - \frac{5}{7}$

$= \frac{7}{7} - \frac{5}{7} = \frac{7-5}{7} = \frac{2}{7}$

Thus, $\frac{2}{7}$ oranges was left in the basket.

EXERCISE-7.6

(a) $\frac{2}{3} + \frac{1}{7}$

(b) $\frac{3}{10} + \frac{7}{15}$

(c) $\frac{4}{9} + \frac{2}{7}$

(d) $\frac{5}{7} + \frac{1}{3}$

(e) $\frac{2}{5} + \frac{1}{6}$

(f) $\frac{4}{5} + \frac{2}{3}$

(g) $\frac{3}{4} - \frac{1}{3}$

(h) $\frac{5}{6} - \frac{1}{3}$

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

(j) $\frac{1}{2} + \frac{1}{3} + \frac{1}{6}$

(k) $1\frac{1}{3} + 3\frac{2}{3}$

(k) $1\frac{1}{3} + 3\frac{2}{3}$

(l) $4\frac{2}{3} + 3\frac{1}{4}$

(m) $\frac{16}{5} - \frac{7}{5}$

(n) $\frac{4}{3} - \frac{1}{2}$

Answer:

(a) L.C.M. of 3 and 7 is 21

$\therefore \frac{2}{3} + \frac{1}{7} = \frac{2\times7+1\times3}{21} = \frac{14+3}{21} = \frac{17}{21}$

(b) L.C.M. of 10 and 15 is 30

$\therefore \frac{3}{10} + \frac{7}{15} = \frac{3\times3+7\times2}{30} = \frac{9+14}{30} = \frac{23}{30}$

(c) L.C.M. of 9 and 7 is 63

$\therefore \frac{4}{9} + \frac{2}{7} = \frac{4\times7+2\times9}{63} = \frac{28+18}{63} = \frac{46}{63}$

(d) L.C.M. of 7 and 3 is 21

$\therefore \frac{5}{7} + \frac{1}{3} = \frac{5\times3+7\times1}{21} = \frac{15+7}{21} = \frac{22}{21} = 1\frac{1}{21}$

(e) L.C.M. of 5 and 6 is 30

$\therefore \frac{2}{5} + \frac{1}{6} = \frac{2\times6+5\times1}{30} = \frac{12+5}{30} = \frac{17}{30}$

(f) L.C.M. of 5 and 3 is 15

$\therefore \frac{4}{5} + \frac{2}{3} = \frac{4\times3+2\times5}{15} = \frac{12+10}{15} = \frac{22}{15} = 1\frac{7}{15}$

(g) L.C.M. of 4 and 3 is 12

$\therefore \frac{3}{4} - \frac{1}{3} = \frac{3\times3-4\times1}{12} = \frac{9-4}{12} = \frac{5}{12}$

(h)L.C.M. of 6 and 3 is 6

$\therefore$

$$\frac{5}{6} - \frac{1}{3} = \frac{5\times1-2\times1}{6} = \frac{5-2}{6} = \frac{3}{6} = \frac{1}{2}$$

(i)L.C.M. of 3, 4 and 2 is 12

$$\therefore \frac{2}{3} + \frac{3}{4} + \frac{1}{2} = \frac{2\times4+3\times3+1\times6}{12} = \frac{6+9+6}{12} = \frac{23}{12} = 1\frac{11}{12}$$

(j)L.C.M. of 2, 3, and 6 is 6

$\therefore$

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{6} = \frac{1\times3+1\times2+1\times1}{6} = \frac{3+2+1}{6} = \frac{6}{6} = 1$$

(k)L.C.M. of 3 and 3 is 3

$\therefore$

$$\frac{4}{3} + \frac{11}{3} = \frac{4+11}{3} = \frac{15}{3} = 5$$

(l)L.C.M. of 3 and 4 is 12

$$\therefore \frac{14}{3} + \frac{13}{4} = \frac{14\times4+13\times3}{12} = \frac{56+39}{12} = \frac{95}{12} = 7\frac{11}{12}$$

(m)L.C.M. of 5 and 5 is 5

$$\therefore \frac{16}{5} - \frac{7}{5} = \frac{16-7}{5} = \frac{9}{5} = 1\frac{4}{5}$$

(n)L.C.M. of 3 and 2 is 6

$$\therefore \frac{4}{3} - \frac{1}{2} = \frac{4\times2-1\times3}{6} = \frac{8-3}{6} = \frac{5}{6}$$

Question 2. Sarika bought $\frac{2}{5}$ meter of ribbon and Lalita $\frac{3}{4}$ meter of ribbon. What is the total length of the ribbon they bought?

Answer:

Ribbon bought by Sarita = $\frac{2}{5}$ m and Ribbon bought by Lalita = $\frac{3}{4}$ m

Total length of ribbon = $\frac{2}{5} + \frac{3}{4} = \frac{2 \times 4 + 5 \times 3}{20}$ [∵ L.C.M. of 5 and 4 is 20]

= $\frac{8+15}{20} = \frac{23}{20} = 1\frac{3}{20}$ m

Therefore, they bought $1\frac{3}{20}$ m of ribbon.

Question 3. Naina was given $1\frac{1}{2}$ piece of cake and Najma was given $1\frac{1}{3}$ piece of cake. Find the total amount of cake given to both of them.

Answer:

Cake taken by Naina = $1\frac{1}{2}$ piece and Cake taken by Najma = $1\frac{1}{3}$ piece

Total cake taken = $1\frac{1}{2} + 1\frac{1}{3} = \frac{3}{2} + \frac{4}{3} = \frac{3 \times 3 + 4 \times 2}{6}$ [∵ L.C.M. of 2 and 3 is 6]

= $\frac{9+8}{6} = \frac{17}{6} = 2\frac{5}{6}$

Therefore total consumption of cake is $2\frac{5}{6}$.

Question 4. Fill in the boxes:

(a) $\Box - \frac{5}{8} = \frac{1}{4}$

(b) $\Box - \frac{1}{5} = \frac{1}{2}$

(c) $\frac{1}{2} - \Box = \frac{1}{6}$

Answer:

(a) $\frac{1}{4} + \frac{5}{8} = \frac{2+5}{8} = \frac{7}{8}$

(b) $\frac{1}{2} + \frac{1}{5} = \frac{5+2}{10} = \frac{7}{10}$

(c) $\frac{1}{2} - \frac{1}{6} = \frac{3-1}{6} = \frac{2}{6}$

Question 5.Complete the addition – subtraction box:

Answer:
Sol.

Question 6. A piece of wire $\frac{7}{8}$ meter long broke into two pieces. One piece was $\frac{1}{4}$ meter long. How long is the other piece?

Answer:

Total length of wire = $\frac{7}{8}$ meter

Length of first part = $\frac{1}{4}$ meter

Remaining part = $\frac{7}{8} - \frac{1}{4} = \frac{7 \times 1 - 2 \times 1}{8}$ [∵ L.C.M. of 8 and 4 is 8]

= $\frac{7-2}{8} = \frac{5}{8}$ meter

Therefore, the length of remaining part is $\frac{5}{8}$ meter.

Question 7. Nandini house is $\frac{9}{10}$ km from her school. She walked some distance and then took a bus for $\frac{1}{2}$ km to reach the school. How far did she walk?

Answer:

Total distance between school and house = $\frac{9}{10}$ km

Distance covered by bus = $\frac{1}{2}$ km

Remaining distance = $\frac{9}{10} - \frac{1}{2} = \frac{9 \times 1 - 1 \times 5}{10}$ [∵ L.C.M. of 10 and 2 is 10]

= $\frac{9-5}{10} = \frac{4}{10} = \frac{2}{5}$ km

Therefore, distance covered by walking us $\frac{2}{5}$ km.

Question 8. Ahsa and Samuel have bookshelves of the same size partly filled with books. Asha's shelf is $\frac{5}{6}th$ full and Samuel's shelf is $\frac{2}{5}th$ full. Whose bookshelf is more full? By what fraction?

Answer:

$\frac{5}{6}$ and $\frac{2}{5}$

$\Rightarrow \frac{5}{6} \times \frac{5}{5} = \frac{25}{30}$ and $\frac{2}{5} \times \frac{6}{6} = \frac{12}{30}$ [∵ L.C.M. of 6 and 5 is 30]

∵ $\frac{25}{30} > \frac{12}{30} \Rightarrow \frac{5}{6} > \frac{2}{5}$

∴ Asha's bookshelf is more covered than Samueal.

Difference = $\frac{25}{30} - \frac{12}{30} = \frac{13}{30}$

Question 9. Jaidev takes $2\frac{1}{5}$ minutes to walk across the school ground. Rahul takes $\frac{7}{4}$ minutes to do same. Who takes less time and by what fraction?

Answer:

Time taken by jaidev = $2\frac{1}{5}$ minutes = $\frac{11}{5}$ minutes

Time taken by Rahul = $\frac{7}{4}$ minutes

Difference = $\frac{11}{5} - \frac{7}{4} = \frac{11 \times 4 - 7 \times 5}{20}$ [∵ L.C.M. of 5 and 4 is 20]

= $\frac{44-35}{20} = \frac{9}{20}$ minutes

Thus, Rahul takes less time, which is $\frac{9}{20}$ minutes.

Activity- Draw different pictures to represent different fractions