Mathematics

Chapter 7: Fractions

Important Questions

Multiple Choice questions:

Question 1. $\frac{2}{5} + \frac{3}{10} + \frac{11}{20}$ is equal to:

(a) $\frac{25}{20}$

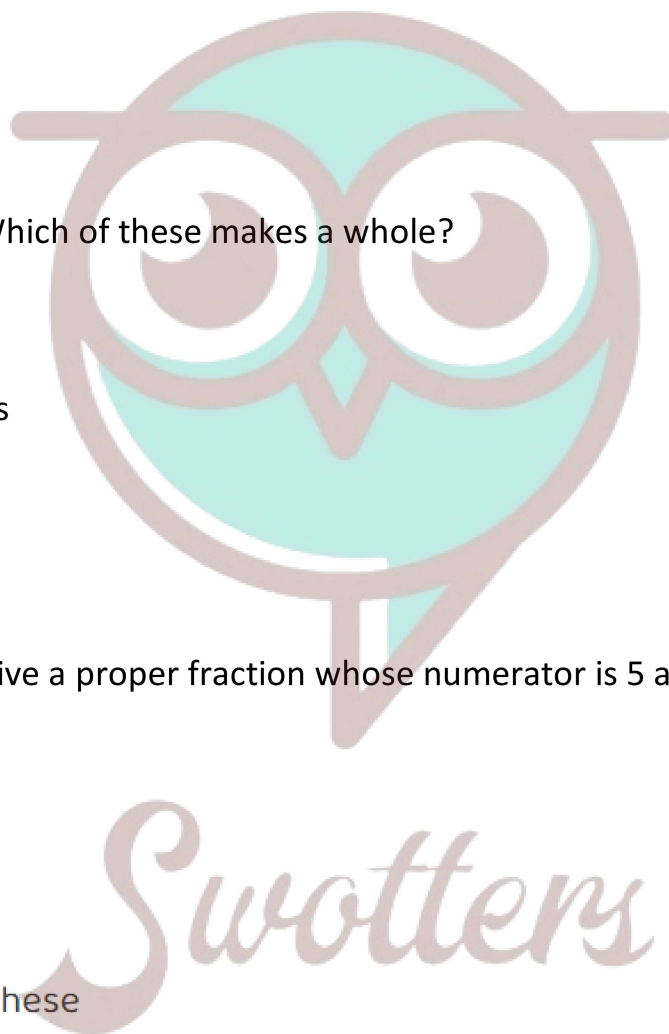(b) $\frac{24}{20}$

(c) $\frac{28}{20}$

(d) $\frac{19}{20}$

Question 2. Which of these makes a whole?

(a) One half

(b) Two halves

(c) 3 halves

(d) 5 halves

Question 3. Give a proper fraction whose numerator is 5 and denominator is 7.

(a) $\frac{7}{5}$

(b) $\frac{5}{7}$

(c) $\frac{3}{7}$

(d) None of these

Question 4. Mixed fraction $2\frac{3}{19}$ as improper fraction is:

(a) $\frac{40}{19}$

(b) $\frac{41}{19}$

(c) $\frac{42}{19}$

(d) none of these

Question 5. What is the simplified form of the product and $\frac{12}{24}$ and $\frac{36}{72}$

(a) $\frac{16}{24}$

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

(c) 4

(d) $\frac{1}{4}$

Question 6. The identity (x + 3) (x + 4) = x^2 + 7x + 12 is true for
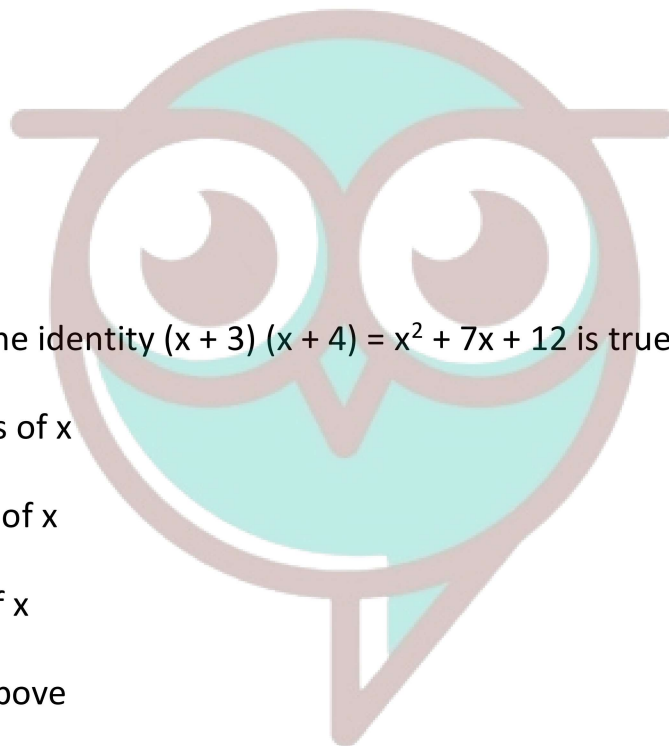
(a) Two values of x

(b) One value of x

(c) All value of x

(d) None of Above

Question 7. What do you call fractions with different denominators?

(a) Like fractions

(b) Unlike fractions

(c) Proper fractions

(d) Improper fractions

Question 8. If the numerator and denominator of a fraction are equal then the fraction is:

(a) less than 1

(b) equal to 1

(c) greater than 1

(d) none of these

Question 9. Mixed fraction of $\frac{17}{9}$ is:

(a) $1\frac{7}{9}$

(b) $1\frac{5}{9}$

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

(d) none of these
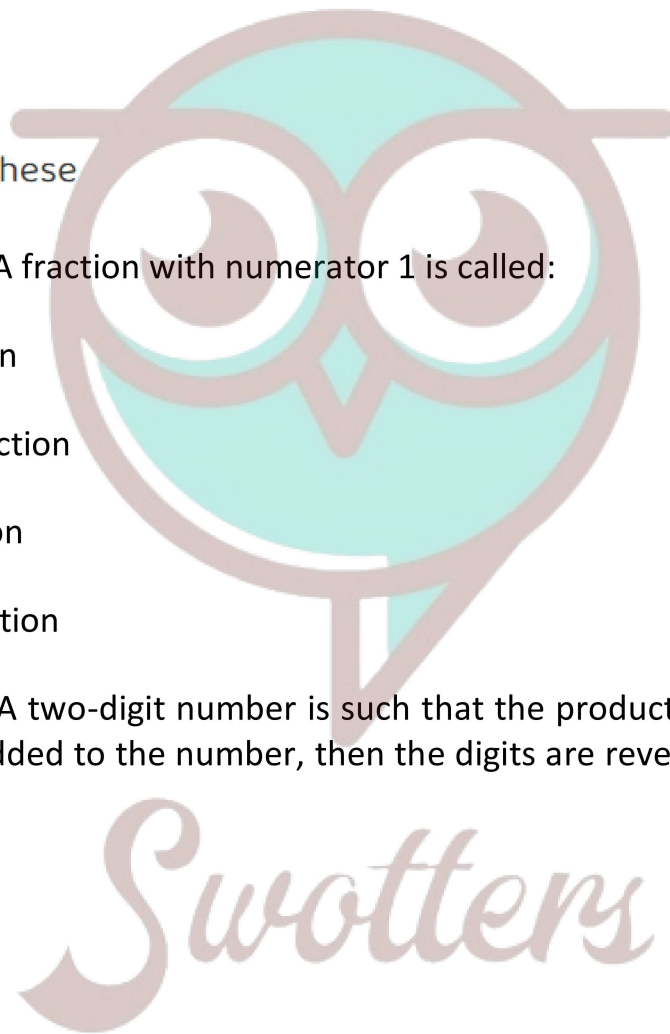
Question 10. A fraction with numerator 1 is called:

(a) like fraction

(b) proper fraction

(c) unit fraction

(d) mixed fraction

Question 11. A two-digit number is such that the product of the digits is 8. When 18 is added to the number, then the digits are reversed. The number is:

(a) 18

(b) 24

(c) 42

(d) 81

Question 12. A _____ is a number representing part of a whole.

(a) Decimal

(b) Proper fraction

(c) Fraction

(d) None of these

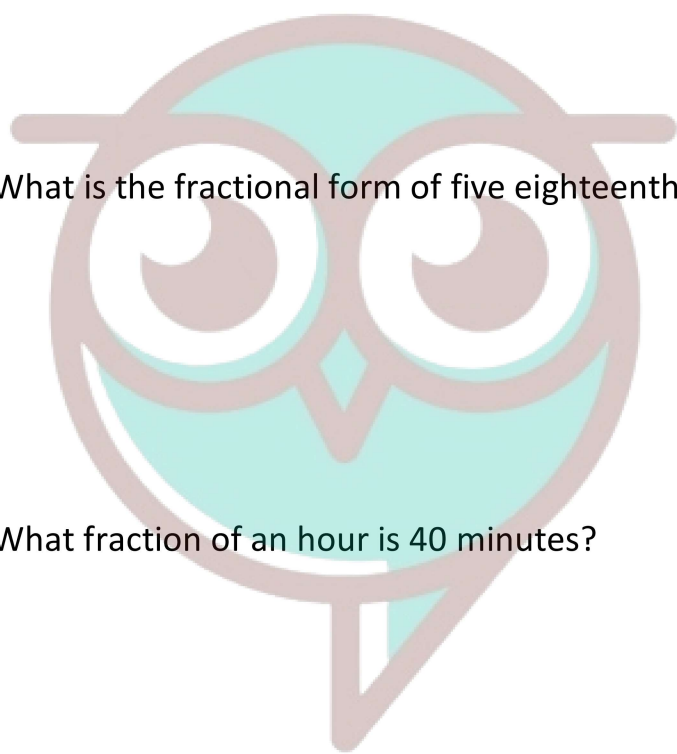Question 13. By how much is $\frac{19}{20}$ greater than $\frac{2}{20}$?

(a) $\frac{21}{20}$

(b) $\frac{21}{40}$

(c) $\frac{17}{20}$

(d) $\frac{17}{40}$

Question 14. What is the fractional form of five eighteenths?

(a) $\frac{15}{18}$

(b) $\frac{18}{5}$

(c) $\frac{5}{18}$

(d) 5.18

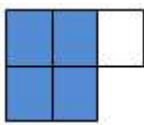Question 15. What fraction of an hour is 40 minutes?

(a) 1

(b) $\frac{1}{3}$

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

(d) None of these

Match The Following:

	Column I		Column II
1.		A.	$\frac{5}{9}$
2.		B.	$\frac{1}{2}$

	Column I		Column II
3.		**C.**	$\frac{1}{3}$
4.		**D.**	$\frac{4}{5}$

Fill in the blanks:

There is a large box of 36 small square boxes.

1. $\frac{1}{2}$ of it is _____.

2. $\frac{2}{3}$ of it is _____.

3. If I make a bench of 20 small boxes, the fraction becomes _____.

4. _____ boxes are required if fraction is $\frac{5}{6}$.

True /False:

1. If a and b are any two integers such that a > b, then -a > – b.

2. In $\frac{3}{7}$, 3 is the part of whole.

3. On a number line, $\frac{2}{7}$ is to the right of zero.

4. $\frac{2}{5}$ is smaller than $\frac{1}{5}$.

5. $\frac{28}{45}$ and $\frac{3}{5}$ represent equivalent fractions.

Very Short Questions:

1. Solve: $\frac{16}{5} - \frac{7}{5}$

2. Colour the part according to $\frac{3}{4}$.

3. Find the equivalent fraction $\frac{3}{5}$ having numerator $\frac{2}{7}$.

4. Rewrite the fractions in the simplest form

    (a) $\dfrac{8}{6}$

    (b) $\dfrac{44}{72}$

5. Express the following as mixed fraction: $\dfrac{19}{6}$

6. Show $\dfrac{10}{10}$ on the number line.

7. Find the missing entries in the tables:

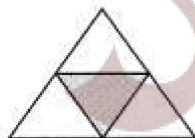| Fraction in standard form	Numerator	Denominator	Diagrammatic Representation
$\dfrac{6}{7}$	84	a	
b	5	6	
$\dfrac{9 \times 2}{5 \times 2}$	c	10	

8. Represent the following fractions on number line.

    (a) $\dfrac{1}{5}$ (b) $\dfrac{3}{5}$
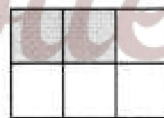
9. Write the fractions showing the shaded portions:

    (a)   (b)

10. Write all the natural numbers from 1 to 15. What fraction of them are prime numbers?

Short Questions:

1. Write the following fractions in ascending order:

$$\frac{2}{3}, \frac{2}{7}, \frac{2}{11}, \frac{2}{5} \text{ and } \frac{2}{9}$$

2. Write any

(a) three proper and three improper fractions with denominator 7.

(b) two proper and two improper fractions with numerator 9.

3. Compare the following fractions:

(a) $\frac{4}{5}$ and $\frac{5}{6}$ (b) $\frac{3}{4}$ and $\frac{2}{5}$

4. Find the sum of $1\frac{2}{3}$ and $3\frac{2}{5}$.

5. Subtract $2\frac{3}{4}$ from $4\frac{1}{8}$.

6. Insert > or < to make each of the following true.

(a) $\frac{6}{7} \ \square \ \frac{5}{7}$ (b) $\frac{10}{21} \ \square \ \frac{10}{12}$ (c) $\frac{3}{7} \ \square \ \frac{3}{8}$

Long Questions:

1. Find the difference between the greatest and the smallest fractions.

$$3\frac{3}{5}, 2\frac{4}{7}, \frac{19}{6}, \frac{18}{8}$$

2. Simran painted $\frac{2}{3}$ of the wall space in her room. Her brother Rahul helped and painted $\frac{1}{5}$ of the wall space. How much did they paint together? What part of the whole space is left unpainted?

Assertion and Reason Questions:

1.) Assertion (A) – 3/7 is obtained when we divide a whole into seven equal parts and take three parts

Reason (R) – a fraction is a number representing part of a whole.

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true but R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true

2.) Assertion (A) – 5/2 is obtained when we divide a whole into five equal parts and three parts

Reason (R) – a fraction is a number representing part of a whole.

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true but R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true

ANSWER KEY -

Multiple Choice questions:

1. (a) $\frac{25}{20}$

2. (b) Two halves

3. (b) $\frac{5}{7}$

4. (b) $\frac{41}{49}$

5. (d) $\frac{1}{4}$

6. (c) All value of x

7. (b) Unlike fractions

8. (b) equal to 1

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

10. (c) unit fraction

11. (b) 24

12. (c) Fraction

13. (c) $\frac{17}{20}$

14. (c) $\frac{5}{18}$

15. (c) $\frac{2}{3}$

Match The Following:

	Column I		Column II
1.		**D.**	$\frac{4}{5}$
2.		**A.**	$\frac{5}{9}$
3.		**B.**	$\frac{1}{2}$
4.		**C.**	$\frac{1}{3}$

Fill in the blanks:

1. $\frac{1}{2}$ of it is **18**.

2. $\frac{2}{3}$ of it is **24**.

3. If I make a bench of 20 small boxes, the fraction becomes $\frac{5}{9}$.

4. **30** boxes are required if fraction is $\frac{5}{6}$.

True /False:

1. True

2. True

3. False

4. False

Very Short Answer:

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

2. $\frac{3}{4}$ means 3 parts out of 4 parts.

So, colour 3 parts out of 4 parts given.

3. $\frac{3}{5} = \frac{3 \times 9}{5 \times 9} = \frac{27}{45}$

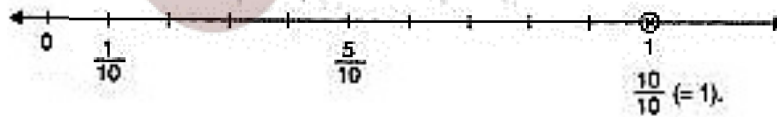**4.** (a) $\frac{8}{6} = \frac{8 \div 2}{6 \div 2} = \frac{4}{3}$

(b) $\frac{44}{72} = \frac{44 \div 2}{72 \div 2} = \frac{22 \div 2}{36 \div 2} = \frac{11}{18}$

5. $\frac{19}{6} = 9 \div 6$

$$6\overline{)19}(3$$
$$\underline{18}$$
$$\underline{1}$$

$\therefore \frac{19}{6} = 3\frac{1}{6}$

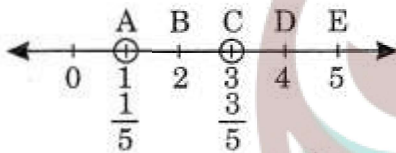**6.** $\frac{10}{10}$ is 1 whole, which can be shown by the point 1.

7.

Fraction in standard form	Numerator	Denominator	Diagrammatic Representation
$\frac{6}{7}$ $\frac{6}{7}$	84	$\boxed{98}$ 98	
$\boxed{\frac{5}{6}}$ $\boxed{\frac{5}{6}}$	5	6	
$\frac{9}{5} = 1\frac{4}{5}$ $\frac{9}{5} = 1\frac{4}{5}$	$\boxed{18}$ $\boxed{18}$	10	

a. $\frac{6}{7}$ $\frac{6}{7} = \frac{6 \times 14}{7 \times 14} = \frac{84}{\boxed{98}}$ $\frac{6 \times 14}{7 \times 14} = \frac{84}{\boxed{98}}$ b. $\boxed{\frac{5}{6}} = \frac{5 \times 1}{6 \times 1} = \frac{5}{6}$ $\boxed{\frac{5}{6}} = \frac{5 \times 1}{6 \times 1} = \frac{5}{6}$ c.

$\frac{9}{5} = \frac{9 \times 2}{5 \times 2} = \frac{\boxed{18}}{10}$ $\frac{9}{5} = \frac{9 \times 2}{5 \times 2} = \frac{\boxed{18}}{10}$

8.

Point A represents $\frac{1}{5}$

Point C represents $\frac{3}{5}$

9. (a) Shaded portion represents $\frac{1}{4}$

(b) Shaded portion represents $\frac{2}{6}$

10. Natural numbers from 1 to 15 are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 Prime numbers from 1 to 15 are 2, 3, 5, 7, 11, 13, i.e., 6 prime numbers.

∴ Fraction of prime numbers = $\frac{6}{15}$

Short Answer:

1. Here, the numerators of all the fractions are same

∴ Ascending order is $\frac{2}{11}, \frac{2}{9}, \frac{2}{7}, \frac{2}{5}, \frac{2}{3}$

2. (a) Proper fractions with denominator 7 are: $\frac{2}{7}, \frac{3}{7}$ and $\frac{5}{7}$

Improper fractions with denominator 7 are: $\frac{9}{7}, \frac{11}{7}$ and $\frac{13}{6}$

(b) Proper fractions with numerator 9 are: $\dfrac{9}{11}$ and $\dfrac{9}{17}$

Improper fractions with numerator 9 are: $\dfrac{9}{2}$ and $\dfrac{9}{15}$

3.

(a) $\dfrac{4}{5}$ and $\dfrac{5}{6}$

LCM of 5 and 6 = 30

$\therefore \qquad \dfrac{4}{5} = \dfrac{4 \times 6}{5 \times 6} = \dfrac{24}{30}$

and $\qquad \dfrac{5}{6} = \dfrac{5 \times 5}{6 \times 5} = \dfrac{25}{30}$

Here, $\qquad 24 < 25 \Rightarrow \dfrac{24}{30} < \dfrac{25}{30}$

$\therefore \qquad \dfrac{4}{5} < \dfrac{5}{6}$

(b) $\dfrac{3}{4}$ and $\dfrac{2}{5}$

LCM of 4 and 5 = 20

$\therefore \qquad \dfrac{3}{4} = \dfrac{3 \times 5}{4 \times 5} = \dfrac{15}{20}$

and $\qquad \dfrac{2}{5} = \dfrac{2 \times 4}{5 \times 4} = \dfrac{8}{20}$

Here, $\qquad 15 > 8 \Rightarrow \dfrac{15}{20} > \dfrac{8}{20}$

$\therefore \qquad \dfrac{3}{4} > \dfrac{2}{5}$

4.

$= 4 + \left(\dfrac{2 \times 5}{3 \times 5} + \dfrac{2 \times 3}{5 \times 3} \right) = 4 + \left(\dfrac{10}{15} + \dfrac{6}{15} \right)$

$= 4 + \dfrac{(10 + 6)}{15} = 4 + \dfrac{16}{15} = 4 + 1 + \dfrac{1}{15}$

$= 5 + \dfrac{1}{15} = 5\dfrac{1}{15}$

Hence, $1\dfrac{2}{3} + 3\dfrac{2}{5} = 5\dfrac{1}{15}$

5.

$$4\frac{1}{8} - 2\frac{3}{4} = \frac{(4 \times 8) + 1}{8} - \frac{(2 \times 4) + 3}{4} = \frac{32 + 1}{8} - \frac{8 + 3}{4}$$

$$= \frac{33}{8} - \frac{11}{4}$$

LCM of 8 and 4 is 8

$$\therefore \quad \frac{33 \times 1}{8 \times 1} - \frac{11 \times 2}{4 \times 2} = \frac{33}{8} - \frac{22}{8}$$

$$= \frac{33 - 22}{8} = \frac{11}{8} = 1\frac{3}{8}$$

Hence, $\quad 4\frac{1}{8} - 2\frac{3}{4} = 1\frac{3}{8}$

6.

(a) $\frac{6}{7} \square \frac{5}{7}$

Here, denominators are same, i.e., 7 and 6 > 5

$$\therefore \quad \frac{6}{7} \boxed{>} \frac{5}{7}$$

(b) $\frac{10}{21} \square \frac{10}{12}$

Here, numerators are same, i.e., 10 and 21 > 12

$$\therefore \quad \frac{10}{21} \boxed{<} \frac{10}{12}$$

(c) $\frac{3}{7} \square \frac{3}{8}$

Here, numerators are same, i.e., 3 and 7 < 8

$$\therefore \quad \frac{3}{7} \boxed{>} \frac{3}{8}$$

Long Answer:

1.

We have $3\frac{3}{5}, 2\frac{4}{7}, \frac{19}{6}, \frac{18}{8}$

$3\frac{3}{5} = \frac{(3 \times 5) + 3}{5} = \frac{15 + 3}{5} = \frac{18}{5}$

$2\frac{4}{7} = \frac{(2 \times 7) + 4}{7} = \frac{14 + 4}{7} = \frac{18}{7}$

Improper form of all the fractions are

$\frac{18}{5}, \frac{18}{7}, \frac{19}{6}$ and $\frac{18}{8}$

$$
\begin{array}{r|llll}
2 & 5, & 7, & 6, & 8 \\
\hline
2 & 5, & 7, & 3, & 4 \\
\hline
2 & 5, & 7, & 3, & 2 \\
\hline
3 & 5, & 7, & 1, & 1 \\
\hline
5 & 1, & 7, & 1, & 1 \\
\hline
7 & 1, & 1, & 1, & 1 \\
\hline
& 1, & 1, & 1, & 1,
\end{array}
$$

LCM $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$

LCM of 5, 7, 6 and 8 = 840

Making the denominators same, we have

$\frac{18}{5} = \frac{18 \times 168}{5 \times 168} = \frac{3024}{840}$ $[\because 840 \div 5 = 168]$

$\frac{18}{7} = \frac{18 \times 120}{7 \times 120} = \frac{2160}{840}$ $[\because 840 \div 7 = 120]$

$\frac{19}{6} = \frac{19 \times 140}{6 \times 140} = \frac{2660}{840}$ $[\because 840 \div 6 = 140]$

$\frac{18}{8} = \frac{18 \times 105}{5 \times 105} = \frac{1890}{840}$ $[\because 840 \div 8 = 105]$

Here $\frac{3024}{840}$ or $\frac{18}{5}$ is the greatest fraction and

$\frac{1890}{840}$ or $\frac{18}{8}$ is the smallest fraction.

Difference

$= \frac{18}{5} - \frac{18}{8} = \frac{18 \times 8}{5 \times 8} - \frac{18 \times 5}{8 \times 5} = \frac{144}{40} - \frac{90}{40}$

$= \frac{54}{40} = \frac{27}{20}$

Hence the required difference $= \frac{27}{20}$ or $1\frac{7}{20}$

2. Space of the wall painted by Simran $= \frac{2}{3}$

Space of the wall painted by Rahul = $\frac{1}{5}$

Total space painted by both = $\frac{2}{3} + \frac{1}{5}$

$= \frac{2 \times 5}{3 \times 5} + \frac{1 \times 3}{5 \times 3} = \frac{10}{15} + \frac{3}{15} = \frac{10 + 3}{15} = \frac{13}{15}$

Unpainted space of the wall $= 1 - \frac{13}{15}$

$= \frac{1}{1} - \frac{13}{15} = \frac{1 \times 15}{1 \times 15} - \frac{13 \times 1}{15 \times 1}$

$= \frac{15}{15} - \frac{13}{15} = \frac{15 - 13}{15} = \frac{2}{15}$

Hence $\frac{2}{15}$ th of the wall space is unpainted.

Assertion and Reason Answers:

1) a) Both A and R are true and R is the correct explanation of A

2) d) A is false but R is true