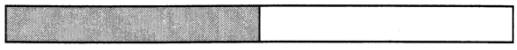
(Olympiad Champs Question)

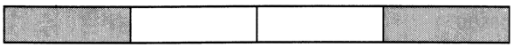
Factions and Operation on Factions

Multiple Choice Questions

CHALLENGE A

1. Pick the odd one out.

(a) 

(b) 

(c) 

(d) 

2. 1/5 of 6 oranges: 6/5orange:: 1/6 of 11 apples: ___apple

(a) 11/6 (b) 6/11

(c) 5/6 (d) 6/5

Directions (Qs. 3 and 4): Find the value of '*' in the following fractions.

3. $5/7 = {}^{*}/21$

(a) 16 (b) 18

(c) 15 (d) 17

4. $3/{}^{*} = 18/24$

(a) 4

(b) 5

(c) 6

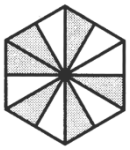
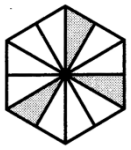
(d) 8

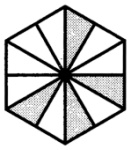
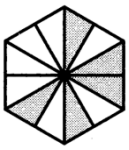
5. By how much $\frac{32}{70}$ is greater than $\frac{42}{100}$?

(a) $\frac{45}{94}$ (b) $\frac{57}{100}$

(c) $\frac{13}{350}$ (d) $\frac{13}{700}$

6. Which of the following figure represents 5/12 of a whole.

(a)  (b) 

(c)  (d) 

Directions (Qs. 7 and 8): Convert the following decimals into fractions.

7. 3.6987

(a) 36987/100 (b) 36987/10

(c) 36987/1000 (d) 36987/10000

8. 789.3

(a) 7893/10 (b) 7893/100

(c) 7893/1000 (d) 7893/10000

9. Convert the given decimal into fraction 8745.69837

(a) 874569837/10

(b) 874569837/1000

(c) 874569837/100000

(d) 874569837/1000000

Directions (Qs. 10 to 13) Convert the following decimals into fractions.

10. 786/1000

(a) 0.786 (b) 78.6

(c) 786.0 (d) 7.86

11. 69/10

(a) 69 (b) 6.9

(c) 0.069 (d) 0.69

12. 1478/100000

(a) 147.8 (b) 0.1478

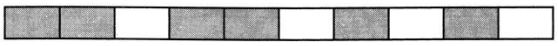
(c) 0.01478 (d) 14.78

13. 133/10

(a) 0.133 (b) 1.33

(c) 13.3 (d) 0.0133

14. What part of the given 10 cm ribbon is shaded when each fragment equals to 1 cm? (Express your answer in decimal fraction.)



(a) 0.8 (b) 0.6

(c) 0.9 (d) 0.4

15. What is the next fraction in this sequence?

2/77. 4/77, 8/77. 16/77....

(a) 22/77 (b) 30/77

(c) 32/77 (d) 42/77

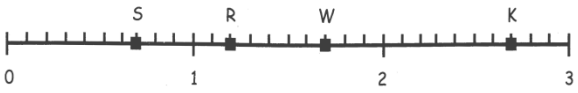
CHALLENGE B

16. Match the corresponding equivalent fraction given in list II with the fractions given in list I.

	List I		List II
A.	3 / 8	1.	35 / 42
B.	4 / 5	2.	6 / 16
C.	7 / 10	3.	16 / 20
D.	5 / 6	4.	35 / 50

	A	B	C	D
(a)	2	3	4	1
(b)	1	3	2	4
(c)	3	2	1	4
(d)	1	3	2	4

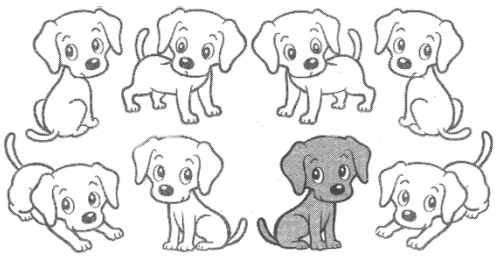
17. Which point on the number line represents 17/10?



(a) S (b) R

(c) W (d) K

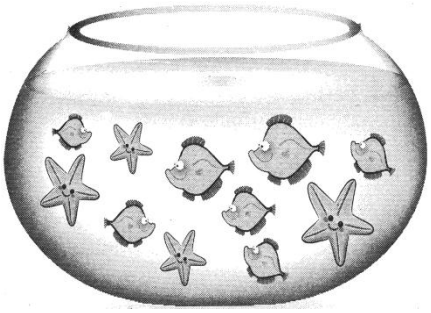
18. Mother Labrador gave birth to 8 puppies. Off these puppies, 1 is black in colour whereas other 7 are golden coloured. What fraction of the whole group of puppies is black Labrador.



(a) 1/7 (b) 7/8

(c) 1/8 (d) 8/7

19. Below is an aquarium with different types of fishes swimming in it. What fraction of fishes is NOT star FISHES?



(a) 4/7 (b) 3/7

(c) 7/7 (d) 1/7

20. If there ore 7 apples and 5 oranges in the basket then what fraction of oranges are there in the fruit basket?

(a) 5/7 (b) 7/5

(c) 7/12 (d) 5/12

21. Find the missing number.

3/4. 6/8. 9/12, 12/?

(a) 15 (b) 14

(c) 16 (d) 12

22. Match the following:

	List I		List II
A.	1 / 5 of Rs. 6	1.	2 rupee 50 paisa
B.	1 / 9 of Rs. 18	2.	50 paisa
C.	1 / 4 of Rs. 10	3.	1 rupee + 20 paisa
D.	1 / 6 of Rs. 3	4.	200 paisa

	A	B	C	D
(a)	3	4	1	2
(b)	2	3	4	1
(c)	1	3	2	4
(d)	3	1	2	4

Directions (Qs. 23 to 28): Fill in the blanks by putting the correct operator '<'. '>' or '='.

23. 4/10___8/20

(a) > (b) <

(c) = (d) None of these

24. 5/6___1/6

(a) > (b) <

(c) = (d) None of these

25. 7/8___3/8

(a) > (b) <

(c) = (d) None of these

26. 8/15__4/5

(a) > (b) <

(c) = (d) None of these

27. 3/7___6/14

(a) > (b) <

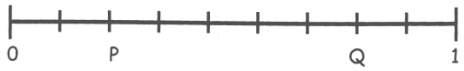
(c) = (d) None of these

28. 5/12___7/12

(a) > (b) <

(c) = (d) None of these

29. P and Q are two points on the following number line. Each of them represents a fraction. Find their product.



(a) $\frac{14}{81}$ (b) $\frac{14}{9}$

(c) $\frac{14}{18}$ (d) $\frac{13}{9}$

30. P and Q are two fractions. When twice of P is subtracted from Q we get $\frac{12}{25}$. If Q is equal to then find the value of P + Q.

(a) $\frac{277}{200}$ (b) $\frac{1}{30}$

(c) $\frac{200}{277}$ (d) $\frac{177}{200}$

31. If $A+1\frac{3}{4}=2$, A must be equal to

(a) 1 (b) $\frac{3}{4}$

(c) $\frac{1}{2}$ (d) $\frac{1}{4}$

32. Which of the following is closest to 1/4?

(a) 5/21 (b) 6/19

(c) 7/20 (d) 3/16

33. 33. A man sold of his land. He gave $\frac{1}{2}$ of the remaining portion to his son. What fraction of the total land is left with him?

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

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

34. Which of the following is closest to 1/2?

(a) 5/11 (b) 7/18

(c) 4/19 (d) 3/11

35. Simplify $\frac{8}{9}+\frac{4}{3}\times\frac{6}{8}+\frac{2}{4}-\frac{1}{2}$. . Choose the correct answer.

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

(c) 2 (d) 3

36. Match the Decimal numbers with their corresponding fraction representation.

	List I		List II
A.	43.6964	1.	436964/100000
B.	4369.64	2.	436964/1000
C.	4.36964	3.	436964/10000
D.	436964	4.	436964/100

	A	B	C	D
(a)	3	4	1	2
(b)	3	1	2	4
(c)	1	2	3	4
(d)	1	3	2	4

37. Which of the following is the smallest fraction?

(a) 4/11 (b) 6/11

(c) 7/11 (d) 2/11

38. Consider the following statements. Which of the following statement (s) is/are true or false?

(A) Among $\frac{2}{3},\frac{5}{6},\frac{8}{9},\frac{7}{12}$ fraction $\frac{7}{12}$ is the smallest fraction.

(B) Among $\frac{2}{17},\frac{4}{17},\frac{5}{17},\frac{6}{17}$ fraction $\frac{4}{17}$ is closest to $\frac{1}{4}$. .

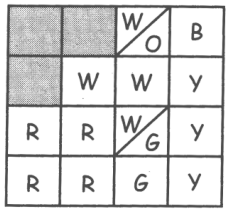
(C) A proper fraction cannot be changed into mixed fraction.

(D) Value of equivalent fractions are same.

(a) TTFF (b) TFTF

(c) TTTT (d) FFFF

Directions (Q. 39) answer the following question by studying the following grid.



39. What fraction of the large square is Red (R), Blue (B), Orange (0), Green (6), White (W) and Yellow (Y)? Choose the correct answer.

(a) Red: 1/4, Blue: 1/16, Orange: 1/16, Green: 3/16, White: 3/16, Yellow: 3/16

(b) Red: 4/4, Blue: 1/16, Orange: 1/16, Green: 3/32, White: 3/16, Yellow: 3/16

(c) Red: 1/4, Blue: 1/16, Orange: 1/16, Green: 3/16, White: 3/16, Yellow: 3/16

(d) Red 1/4 / Blue: 1/16, Orange: 1/32, Green: 3/32, White: 3/16, Yellow: 3/16

40. Anita works for 12 hours and sleeps for 6 hours. What fraction of the day does Anita sleep?

(a) 6/12 (b) 12/24

(c) 6/24 (d) 18/24

41. How many minutes are there in 2/3 of an hour?

(a) 40 minutes (b) 60 minutes

(c) 20 minutes (d) 100 minutes

42. Divide Rs. 35 into 100 equal parts. Give a decimal fraction that represents each part.

(a) Rs.3.5 (b) Rs.0.35

(c) Rs.0.035 (d) Rs. 0.0035

43. A thread of 1000 m is cut into 25 equal parts. What decimal fraction represents the lengths of each part of the thread?

(a) 0.25m (b) 2.5m

(c) 0.025m (d) 0.0025m

44. A cookie factory uses 3/8 of a bag of flour in each bag of cookies. The factory used 3/4 of a bag of flour yesterday. How many bags of cookies did the factory made yesterday?

(a) 1 (b) 2

(c) 1/2 (d) 3/2

45. Consider the following statements.

Statement A: 6/13 < 7/15.

Statement B: 4/25 = 16/100.

Choose the correct option.

(a) Only statement A is true.

(b) Only statement B is true.

(c) Both A and B are true.

(d) Both A and B are false.

46. Consider the following statements.

Statement A: 1/5 of Rs. 10 is 200 paisa.

Statement B: There are 50 cm in 1/6th part of 3 meters.

Choose the correct option.

(a) Only statement A is true.

(b) Only statement B is true.

(c) Both A and B are true.

(d) Both A and B are false.

47. Which of the following statement (s) is true or false.

Statement A: Tuesday is 1/7 day of a week.

Statement B: March is 1/12 month of a quarter year.

Statement C: April and July are 2/12 month of a year.

Statement D: 14+h and 15+h are 2/28 days of February.

(a) TFFT (b) TFTT

(c) TTFF (d) TFTF

48. Given below a quantities of ingredients to make a 6reek salad. Read it and find how many more cups of olives than cucumber are needed?

Greek salad		Greek salad	
2 cups	lettuce	$\frac{2}{3}$ of a cup	tomatoes
1 cup	red onions	$\frac{2}{3}$ of a cup	feta cheese
$\frac{15}{8}$ cups	olives	$\frac{5}{8}$ of a teaspoon	Salt
$\frac{1}{2}$ of a cup	cucumber	$1\frac{1}{2}$ teaspoons	pepper

(a) 11/8 (b) 11/5

(c) 12/3 (d) 1/8

49. A coat costs Rs. 40. Which is a bigger discount offer for the coat?

(a) 1/4 off the normal price

(b) 3/10 off the normal price

(c) 2/10 off the normal price

(d) 1/2 off the normal price

50. Which of the following statement(s) is true or false?

(i) $\frac{1}{2}$ is equivalent to 5/10

(ii) $\frac{1}{4}$ is greater than $\frac{3}{4}$

(iii) $\frac{1}{4}$ is less than $\frac{1}{4}$

(iv) Decimal fraction is $\frac{3}{4}$ is 0.75

(a) TFFT (b) TTFT

(c) FTTT (d) FTFT

Directions (Qs. 51 and 52): Read the figures given below and answer the questions that following.

Which of the above figure(s) represents fraction.

51.

(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

(vii) 

(vii) 

(ix) 

Which of the above figure (s) represents fraction $\frac{1}{2}$

(a) I, VI, vii (b) I, iii, vii

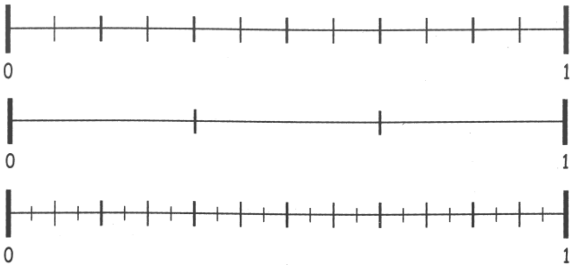
(c) I, IV, ix (d) I, v, ix

52. Which of the above figure(s) represents fraction 1/5

(a) i, ii, v, vii (b) iv, v, vii

(c) ii, v, vii (d) I, v, ix

Directions (53 and 54): The three number lines divided into 12th parts, 3rd parts, and 24th parts respectively.



53. The fraction that is equivalent to 2/3 on the 12th parts number line is

(a) 7/12 (b) 8/12

(c) 12/12 (d) 6/12

54. The fraction that is equivalent to 2/3 on the 24th parts number line is

(a) 7/24 (b) 16/24

(c) 8/24 (d) 6/24

55. Replace the symbol '?" in the table below by choosing correct option to become equivalent fraction. The rule is to have the denominator as 100.

Input	Output
1/2	?/100
3/10	?/100
2/10	?/100
3/4	?/100

(a) 50, 30, 20. 75 (b) 5, 1.2,75

(c) 4. 2, 1, 5 (d) 50, 20, 10, 75

56. Which statement is true or false?

Statement A: The like fractions for 1/3 and 3/10 are 10/30 and 9/30.

Statement B: 2/11 is smaller than 2/5.

Statement C: 3/10 and 9/10 are equivalent fractions.

Statement &: 2/4 and l/2are equivalent fractions.

(a) TTFT (b) FTTF

(c) FTFT (d) TFTT

57. Compare the fractions given in both the column. Fill the boxes by choosing the correct operator. (>.<,=)

Fraction	Operator	Fraction
1/2	□	40/100
6/10	□	42/100
7/10	□	75/100
3/4	□	75/100

(a) >,>,<,= (b) <.>.<,=

(c) >,<,<,= (d) >,>.=,<

58. The order from the smallest to biggest fraction for the fractions 1/2, 4/5. 3/8 is

(a) 3/8,1/2,4/5 (b)1/2.4/5.3/8

(c) 4/5,1/2,3/8 (d) 3/8,4/5,1/2

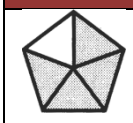
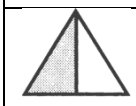
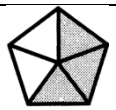
59. Choose the correct option for the given expression to be hold true.

3/5 = 6/? =? /20 =? /25

(a) 10, 12, 15 (b) 2, 4, 5

(c) 10, 20, 20 (d) 20, 10, 20

60. Fill the table with the fraction of the shaded portion of the figures by choosing the correct option. One has been done for you.

Input	Output	Input	Output
	4 / 5		—
	—		—

(a) 1/2.3/8,3/5 (b) 1/2,3/7,4/5 .

(c) 1/2.3/9,4/5 (d) 1.3/9,4/5

61. Fill the output column in the table with the simplified fractions by choosing the correct option. One has been done for you.

Input	Output	Input	Output	Input	Output
9/18	1/2	18/45	—	48/80	—
12/18	—	8/32	—		

(a) 2/3,2/5.1/4,3/5 (b) 2/4.3/5,1/4,2/5

(c) 1/2,3/5,1/4,2/5 (d) 1/2,3/5,4/5.2/5

62. What is the value of $\frac{2}{7}+\frac{3}{7}$

(a) $\frac{15}{7}$

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

(c) $\frac{6}{7}$

(d) $\frac{35}{14}$

63. What is the value of $\frac{2}{8}+\frac{1}{3}+\frac{7}{3}$

(a) $\frac{10}{3}$ (b) $\frac{35}{2}$

(c) $\frac{30}{3}$ (d) $\frac{10}{27}$

64. Billy ate. Pizza and John ate. Pizzas. How much more pizza did Billy eat than John?

(a) 2/3 (b) 1/2

(c) 1/4 (d) ¾

65. $\frac{2}{5}>\frac{3}{8}$

(a) True (b) False

(c) Partially true (d) none of these

66. How many minutes in 2/3 of an hour?

(a) 40 minutes (b) 60 minutes

(c) 20 minutes (d) 100 minutes

67. One half is same as two quarters?

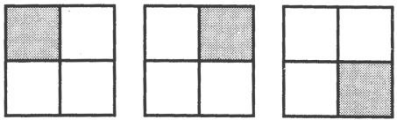
(a) True (b) False

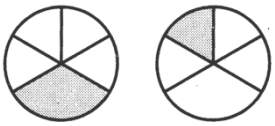
(c) Partially true (d) none of these

68. Which of the following drawing shows $2\times\frac{1}{5}$

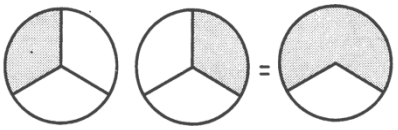
(a) 

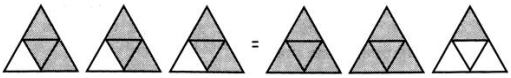
(b) 

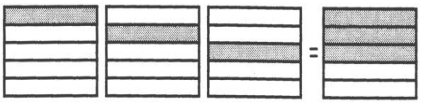
(c) 

(d) 

69. Which of the following drawing shows $3\times\frac{3}{4}=2\frac{1}{4}$

(a) 

(b) 

(c) 

(d) None of these

70. The reciprocal of $1\frac{2}{3}$

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

(b) $1\frac{3}{2}$

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

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

Solutions with Explanation

CHALLENGE A

1. (d) The first three options show equivalent fractions with shaded portions 1/2, 2/4and 4/8. Whereas 3/5 is not a equivalent fraction among them.

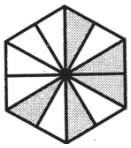
2. (a) 1/5 of 6 or anges: 6/5: 1/6 of 11 apples: 11 /6apple.

3. (c) $5/7 = {}^{*}/21$. Multiplying the numerator and denominator by 3. we get 15/21. Thus * is 15.

4. (a) $3/{}^{*} = 18/24$, Dividing the numerator and the denominator by 6, we get 3/4. Thus *=4.

5. (c) $\frac{32}{70} - \frac{42}{100} = \frac{16}{35} - \frac{21}{50} = \frac{160-147}{350} = \frac{13}{350}$

6. (d) 5/12 of a whole means 5 portions are shaded of the total 12 portions. This is represented by the following figure.



7. (d) 3.6987=36987/10000

8. (a) 789.3=7893/10

9. (c) 8745.69837=874569837/100000

10. (a) 786/1000=0.786

11. (b) 69/10=6.9

12. (c) 1478/100QOO = 0.01478

13. (c) 133/10=13.3

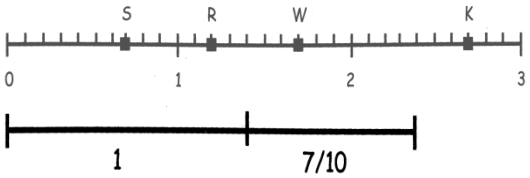
14. (b) There are 0.6 fragments of 1 cm that are blue in colour.

15. (c) As can be seen the given fractions are following a pattern in which the proceeding fraction is multiplied by 2, thus the next part of this sequence 2/77, 4/77, 8/77, 16/77 should be 32/77.

CHALLENGE B

16. (a)

17. (c) W represents 1 7/10 portion of the number line. 1 7/10 means 1 whole part + 0.7 parts, which can be represented by the following figure;



18. (c) Number of puppies born to mother Labrador = 8. Number of golden Labradors = 7. Number of black Labradors = 1. Total fraction of black Labradors = number of black lab divided by total Labradors = 1/8.

19. (a) Since 4 fishes out of 7 fishes are not star fish therefore required fraction = -.

20. (d) Number of fruits in the fruit basket = 12 (7 apples and 5 oranges). Fraction of oranges = number of oranges/ number of fruits= 5/12.

21. (c) 3/4, 6/8, 9/12, 12/? Is following a pattern in which the equivalent fractions are being multiplied in both numerator and denominator by 1, 2, 3 and 4 respectively. Thus following the pattern we get? should be equal to 16.

22. (a)

	List I	List II
A	1/5 of Rs. 6	$1/5\times6\times100=120$ paisa = 1 rupee + 20 paisa
B	1/9 of Rs. 18	$1/9\times18\times100=200$ paisa
C	1/4 of Rs. 10	$1/4\times10\times100=250$ paisa = 2 rupee 50 paisa
D	1/6 of Rs. 3	$1/6\times3\times100=50$ paisa

23. (c) 4/10 = 8/20. Upon simplifying, 8/20 and 4/10 equals to 2/5.

24. (a) 5/6 > 1/6. Since the denominator is same, the fraction with greater numerator is larger.

25. (a) 7/8 > 3/8, since the denominator is same, the fraction with greater numerator is larger.

26. (b) 8/15 < 4/5. The denominators are different here, so making the denominators equal, we get 8/15 and 12/15. Now since the denominator is same, the fraction with greater numerator is larger.

27. (c) 3/7 = 6/14. on simplifying, 6/14 equals to 3/7.

28. (b) 5/12 < 7/12, Since the denominator is same, the fraction with greater numerator is larger.

29. (a) $A=\frac{2}{9}, B=\frac{7}{9}$

30. (d) $Q-2P=\frac{12}{25}$

$\Rightarrow \frac{3}{4}-\frac{12}{25}=2P$

$\Rightarrow 2P=\frac{27}{100}$

$\Rightarrow P=\frac{27}{200}$

$\therefore P+Q=\frac{27}{200}+\frac{3}{4}=\frac{177}{200}$

31. (d) $A=2-\frac{7}{4}=\frac{8-7}{4}=\frac{1}{4}$

32. (a) A fraction is closest to 1/ 4 when the denominator is about fourth the numerator. Here 5/21 is the option where the fraction is closest to 1/4.

33. (c) Remaining land = -y after selling.

Half of the land he gave to his son $=\frac{1}{4}$

$\therefore$ Remaining land $=\frac{1}{2}-\frac{1}{4}=\frac{1}{4}$

34. (a) A fraction is closest to 1/2 when the denominator is about twice the numerator. Here 5/11 is the option where the fraction is closest to 1/2.

35. $\frac{8}{9}\times\frac{3}{4}=\frac{2}{3}\times\frac{6}{8}=\frac{2}{4}+\frac{2}{4}=1-\frac{1}{2}=\frac{1}{2}$

(By using BODMAS)

36. (a)

37. (d) 4/11,6/11.7/11 and 2/11 all have the same denominator. Thus the fraction with the smallest numerator will be the smallest fraction. The smallest fraction is 2/11.

38. (c)

39. (d) Red: 1/4. Blue: 1/16, Orange: 1/32, Green: 3/32. White; 3/16, Yellow: 3/16.

40. (c) Number of hours in a day = 24, Number of hours for which Anita sleeps = 6, Fraction of hours for which Anita sleeps = 6/24.

41. (a) Number of minutes in 1 hour= 60.
2/3 of I hour = $2/3 \times 60 = 40$ minutes.

42. (b) Rs. 35 is to be divided into 100 equal parts which is equal to 35/100 = Rs. 0.35.

43. (c.) A thread of 1000 m is divided into 25 parts. In decimal fraction it can be written as 25/1000 = 0.025.

44. (b) Divide the total amount of flour used by the amount used in each bag.
$3/4 \div 3/8 = 3/4 \times 8/3 = 2$. . The factory made 2 bags of cookies yesterday.

45. (c) Both statements are true. 6/13 < 7/15. This can be verified by cross multiplication. And 4/25 and 16/100 are equivalent fractions.

46. (c) Both statements are true. Rs. 1 = 100 paisa; Rs. $10 = 10 \times 100 = 1000$ paisa.
1/5th of Rs. $10 = 1/5 \times 1000$ paisa = 200 paisa.
And 1 meter = 100 cm, 3 meter = 300 cm.
1/6th of 3 meter = $1/6 \times 300 = 50$ cm.

47. (b) March is 1/12 month of a quarter year is false. March is 1/12 month of a year.

48. (a) There are 1 5/8 cups of olives and 1/2 cup of cucumber in Greek Salad. The recipe has 15/8 -1/2 = 11/8 cups more olives than cucumber.

49. (d)

50. (a)

51. (a)

52. (a)

52. (b)

53. (b)

55. (a)

$$\frac{1}{2} \times \frac{50}{50} = \frac{50}{100}; \frac{3}{10} \times \frac{10}{10} = \frac{30}{100}; \frac{2}{10} \times \frac{10}{10} = \frac{20}{100}; \frac{3}{4} \times \frac{25}{25} = \frac{75}{100}$$

56. (a)

57. (a)

58. (a) Given fractions are $\frac{1}{2}, \frac{4}{5}, \frac{3}{8}$

L.C.M. of 2, 5, 8 = 40

$$\therefore \frac{1}{2} \times \frac{20}{20} = \frac{20}{40}, \frac{4}{5} \times \frac{8}{8} = \frac{32}{40}, \frac{3}{8} \times \frac{5}{5} = \frac{15}{40}$$

So, order from the smallest to biggest is $\frac{15}{40}, \frac{20}{40}, \frac{32}{40}$

I.e., $\frac{3}{8}, \frac{1}{2}, \frac{4}{5}$.

59. (a) $\frac{3}{5} = \frac{6}{?} \Rightarrow \frac{3 \times 2}{5 \times 2} = \frac{6}{10}$

Now, $\frac{6}{10} = \frac{?}{20} \Rightarrow \frac{6 \times 2}{10 \times 2} = \frac{12}{20}$

Now, $\frac{12}{20} = \frac{?}{25} \Rightarrow \frac{12 \times 15}{20 \times 15} = \frac{180}{300} = \frac{18}{30} = \frac{9}{25}$

60. (a)

61. (a)

62. (b)

63. (b)

64. (b)

65. (a)

66. (a)

67. (a)

68. (d)

69. (b)

70. (d)