[11-01-14-I5]

Topic 3: Fractions

1. Express each of the following as a mixed number in its simplest form.

   (a) $7 \div 3 =$

   (b) $15 \div 4 =$

   (c) $11 \div 5 =$

   (d) $28 \div 6 =$

   (e) $40 \div 9 =$

   (f) $36 \div 8 =$

   (g) $\frac{7}{4} =$

   (h) $\frac{14}{6} =$

   (i) $\frac{26}{5} =$

   (j) $\frac{73}{6} =$

   (k) $\frac{34}{10} =$

   (l) $\frac{143}{7} =$

2. Work out these problems. Give each answer as a whole number or fraction in its simplest form.

   (a) 4 children share 8 candles. How many candles does each child receive?

   (b) An apple pie was shared equally among 4 girls. What fraction of the apple pie did each girl get?

   (c) 13 boys bought and shared 5 pizzas. What fraction of a pizza did each boy get?

   (d) Mazura cuts a 12-meter string into 8 equal pieces. What is the length of each piece of string?

   (e) A bag of sugar weighing 5 kilograms was divided equally into 8 bowls. What was the weight of sugar in each bowl?

   (f) Mrs. Green poured the milk from two 1-liter cartons into 6 glasses. How much milk was there in each glass? Give your answer in liters.

   (g) A long ladder 11 yd long is 4 times as high as a fire-engine. How high is the fire-engine?

3. Add. Give each answer in its simplest form.

   (a) $\frac{1}{4} + \frac{5}{12} =$

   (b) $\frac{7}{12} + \frac{2}{3} =$

(c) $\frac{4}{5} + \frac{7}{10} =$

(d) $\frac{3}{4} + \frac{5}{6} =$

(e) $\frac{7}{8} + \frac{3}{10} =$

(f) $\frac{7}{12} + \frac{5}{6} =$

(g) $\frac{5}{6} + \frac{3}{8} =$

(h) $\frac{3}{8} + \frac{2}{5} =$

4. Subtract. Give each answer in its simplest form.

(a) $\frac{1}{3} - \frac{2}{9} =$

(b) $\frac{3}{8} - \frac{1}{12} =$

(c) $\frac{5}{6} - \frac{4}{9} =$

(d) $\frac{3}{4} - \frac{1}{6} =$

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

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

(g) $1\frac{5}{6} - \frac{9}{10} =$

(h) $1\frac{3}{8} - \frac{7}{12} =$

5. Add. Give each answer in its simplest form.

(a) $2\frac{3}{4} + \frac{1}{12} =$

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

(c) $2\frac{7}{12} + 1\frac{2}{3} =$

(d) $1\frac{7}{8} + 2\frac{1}{2} =$

(e) $2\frac{7}{9} + 2\frac{1}{3} =$

(f) $3\frac{1}{6} + 2\frac{3}{10} =$

(g) $3\frac{7}{10} + 3\frac{5}{6} =$

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

6. Subtract. Give each answer in its simplest form.

(a) $3\frac{7}{10} - 1\frac{2}{5} =$

(b) $2\frac{7}{9} - 1\frac{1}{3} =$

(c) $3\frac{7}{8} - 2\frac{1}{4} =$

(d) $4\frac{1}{6} - 2\frac{3}{4} =$

(e) $5\frac{1}{4} - 3\frac{1}{2} =$

(f) $4\frac{5}{6} - 1\frac{1}{3} =$

(g) $4\frac{7}{10} - 3\frac{1}{2} =$

(h) $3\frac{5}{8} - 1\frac{1}{6} =$

7. Work out these problems.

(a) Rosie spent $\frac{3}{8}$ of her money on a meal, $\frac{1}{4}$ of it on a movie ticket and saved the rest. What fraction of her money did she save?

(b) A waitress works $1\frac{3}{4}$ hours less in the afternoon than in the evening. If she works $5\frac{1}{3}$ hours in the afternoon, how many hours does she work in the evening?

(c) Mr. Lee gave $\frac{4}{9}$ of his salary to his wife and spent $\frac{1}{3}$ of it on a watch. What fraction of his salary was left?

(d) John is $\frac{1}{8}$ m shorter than Paul and Paul is $\frac{1}{4}$ m taller than Andrew. If John's height is $1\frac{2}{3}$ m, what is the height of Andrew?

(e) The time allotted for a Mathematics test was $2\frac{1}{4}$ hours. Annie completed the test $\frac{2}{3}$ of an hour earlier. How long did she take to complete the test?

(f) $\frac{1}{5}$ of the passengers on a bus are young adults and $\frac{2}{3}$ of them are children. The remaining passengers are senior citizens. What fraction of the passengers are not senior citizens?

(g) A flight of stairs is $10\frac{1}{3}$ m high. Jimmy walks down the stairs and still has $6\frac{5}{8}$ m of stairs to go before he reaches the bottom of the flight of stairs. How far down has he walked?

(h) Emelia mixed $3\frac{1}{4}$ liters of fruit juice with $2\frac{3}{5}$ liters of ice-cream soda to make fruit punch. How much fruit punch did she mix?

8. Find the equivalent measures.

(a) $\frac{4}{5}$ m = _____ cm

(b) $\frac{2}{3}$ h = _____ min

(c) $\frac{3}{4}$ kg = _____ g

(d) $\frac{5}{8}$ day = _____ h

(e) $\frac{3}{5}$ km = _____ m

(f) $\frac{2}{3}$ yd = _____ ft

(g) $\frac{1}{3}$ year = _____ months

(h) $\frac{11}{12}$ min = _____ s

9. Give the answers in compound units.

(a) $3\frac{1}{8}$ km = _____ km _____ m

(b) $4\frac{1}{4}$ ft = _____ ft _____ in.

(c) $1\frac{3}{8}$ lb = _____ lb _____ oz

(d) $5\frac{3}{4}$ h = _____ h _____ min

(e) $2\frac{1}{6}$ years = _____ years _____ months

(f) $6\frac{9}{10}$ min = _____ min _____ s

(g) $7\frac{5}{12}$ days = _____ days _____ h

(h) $3\frac{1}{2}$ gal = _____ gal _____ qt

10. (a) Which has a larger capacity, $3\frac{1}{8}$ ℓ or 3250 ml? _____

(b) Which is heavier, $2\frac{7}{8}$ kg or 2650 g? _____

(c) Which is shorter, $1\frac{2}{3}$ days or 42 h? _____

(d) Clarissa practices her violin for 45 minutes.

Her friend practices for $\frac{2}{3}$ h. Who practices for a longer time? _____

11. Fill in the blanks.

(a) Express 375 ml as a fraction of 1 liter. _____

(b) Express 450 m as a fraction of 1 km. _____

(c) Express 175 cm as a fraction of 3 m. _____

(d) Express 55 minutes as a fraction of 2 hours. _____

(e) What fraction of $4 is 60 cents? _____

(f) What fraction of 1 ft is 10 in.? _____

(g) What fraction of $2\frac{2}{5}$ kg is 75 g? _____

12. Work out these problems.

(a) In a class test, 45 out of 60 students passed.
(i) What fraction of the class passed?
(ii) What fraction of the class failed?

(b) Mary earned $400 a week. She saved $48 a week and spent the rest.
(i) What fraction of her earnings did she save each week?
(ii) What fraction of her earnings did she spend each week?

(c) Victor had 120 marbles. He lost 48 of them.
(i) Express the number of marbles lost as a fraction of the number of marbles he had at first.
(ii) What fraction of his marbles did he have left?

1

13. Multiply.

(a) $\frac{1}{\cancel{15}_{3}} \times \frac{\cancel{7}^{1}}{7} =$

(b) $\frac{2}{3} \times \frac{1}{8} =$

(c) $\frac{9}{10} \times \frac{8}{15} =$

(d) $\frac{3}{4} \times \frac{5}{9} =$

(e) $\frac{9}{2} \times \frac{8}{3} =$

(f) $\frac{3}{8} \times \frac{16}{27} =$

(g) $\frac{21}{6} \times \frac{18}{7} =$

(h) $\frac{11}{12} \times \frac{4}{5} =$

(i) $\frac{10}{11} \times \frac{3}{5} =$

(j) $\frac{12}{15} \times \frac{15}{4} =$

14. Find the value of

(a) $\frac{5}{6}$ of $\frac{9}{10}$ kg

(b) $\frac{1}{3}$ of $\frac{12}{15}$ m

(c) $\frac{4}{15}$ of $\frac{3}{8}$ h

(d) $\frac{1}{2}$ of $\frac{5}{8}$ ℓ

15. Work out these problems.

(a) The length of a rectangle is $\frac{2}{5}$ m. Its width is $\frac{1}{2}$ m. Find the area of the rectangle.

(b) A jug contained $\frac{3}{4}$ qt of lemonade. Lily drank $\frac{4}{5}$ of it. How much lemonade did she drink?

(c) Grandma had $\frac{5}{8}$ kg of sugar. She used $\frac{3}{8}$ of the sugar to make jelly. How much sugar did Grandma use, in kg?

(d) Samuel traveled $\frac{7}{12}$ km from home to the library. He walked $\frac{5}{7}$ of the journey and ran the rest of it. How far did he run?

16. Find the value of each of the following in its simplest form.

(a) $\frac{5}{7} \div 5 = \frac{\cancel{5}}{7} \times \frac{1}{\cancel{5}} =$

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

(c) $\frac{15}{6} \div 5 =$

(d) $\frac{3}{4} \div 10 =$

(e) $\frac{12}{17} \div 8 =$

(f) $\frac{3}{8} \div 2 =$

(g) $\frac{7}{8} \div 21 =$

(h) $\frac{24}{25} \div 3 =$

(i) $\frac{11}{12} \div 33 =$

(j) $\frac{2}{5} \div 3 =$

17. Work out these problems.

(a) Andy poured $\frac{3}{4}$ liter of lemon juice equally into 3 glasses. How much lemon juice was there in each glass?

(b) A piece of string of length $\frac{5}{6}$ m is cut into 15 shorter pieces of equal length. Find the length of each shorter piece of string.

2.

(c) Melvin used $\frac{3}{5}$ of the soil in a bag to fill 7 pots equally. What fraction of the bag of soil did each pot contain?

3.

(d) Sixteen similar boxes of cookies weigh $\frac{8}{9}$ lb. How heavy is each box of cookies?

4

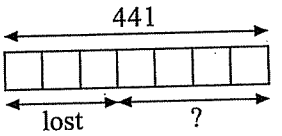
(e) Michael ate $\frac{3}{8}$ of a pizza. He divided the remaining pizza into 6 equal slices and gave one slice to his friend. What fraction of the pizza did his friend have?

WORD PROBLEMS

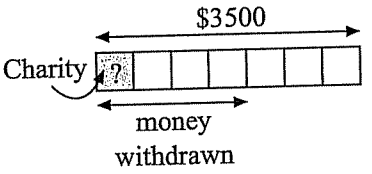
1. Alice used $1\frac{3}{5}$ m from a roll of ribbon to tie 10 Christmas presents. What is the length of ribbon used for each present, in centimeters?

2. Anthony received \$168 from his father. He saved $\frac{5}{6}$ of the money in the bank and spent the rest. How much money did he save?

3. Mariam had 441 stamps. She lost $\frac{3}{7}$ of them. How many stamps did she have left?



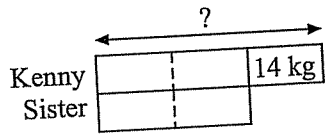
4. Sue had \$3500 in her bank account. She withdrew $\frac{4}{7}$ of the money and donated $\frac{1}{4}$ of this to charity. How much money did she donate to charity?



5. Mr. Magoo spent $\frac{1}{2}$ of his money on a stereo set and $\frac{1}{3}$ of his money on a television set. He then had \$400 left. How much did he pay for the television set?

6. Denise bought a box of 560 pieces of candy. $\frac{4}{5}$ of the pieces of candy were fruity and $\frac{1}{4}$ of the remaining pieces of candy were mint. How many pieces of candy of other flavors were there?

7. Kenny is $1\frac{1}{2}$ times as heavy as his sister. If Kenny is 14 kg heavier than his sister, how much does Kenny weigh?

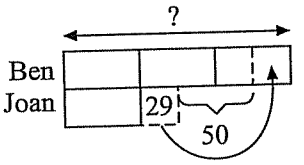


8. The length of a string is $1\frac{1}{3}$ times the length of a stick. If the length of the string is 64 in., what is the length of the stick?

9. Mimi had 126 stickers. She gave $\frac{2}{9}$ of them to her neighbor and 35 stickers to her brother. What fraction of the stickers did she have left?

10. $\frac{5}{12}$ of the guests at a party were female. There were 30 more male than female guests. Find the total number of guests at the party.

11. Ben had 50 more coins than Joan. After Joan had given 29 of her coins to Ben, she had $\frac{1}{3}$ as many coins as Ben. How many coins did Ben have at first?



12. 889 kindergarten kids participated in a drawing contest at a park. They were divided into two groups. $\frac{1}{3}$ of the girls and $\frac{1}{2}$ of the boys were in group A. There was an equal number of boys and girls in group B. Find the number of girls and the number of boys who participated in the drawing contest.

13. Mr. Tay had 20 female carps and 5 male carps in his pond.
    (a) What fraction of the carps were male?
    (b) Mr. Tay's father brought home some male carps and put them into the pond. Then he found that $\frac{1}{5}$ of the carps were female. How many male carps did his father put into the pond?

14. $\frac{3}{4}$ of the students who join a swimming club are boys. $\frac{4}{5}$ of the girls in the swimming club are under 10 years old while 5 girls are over 10 years old.

(a) How many girls are there in the club?

(b) If $\frac{1}{5}$ of the boys leave the swimming club, how many students will be left in the club?

15. Lisa used 880 g of a container of sugar to bake a cake and $\frac{1}{10}$ of the remaining sugar to make cookies. She then had $\frac{3}{7}$ of the container of sugar left. How much sugar was in the container at first?

Take the Challenge!

1. Dorothy lives on Spring Street. Some new friends wanted to visit her at home but they did not know her house number. She gave a little puzzle to help them find her house number. See if you can solve the puzzle below and work out Dorothy's house number on Spring Street.

   The sum of half the number, one-third of the number and one-quarter of the number is 221.

2. In a certain village, $\frac{2}{3}$ of the men married $\frac{3}{5}$ of the women. What fraction of the population in the village are married?

   (Assume marriage of 1 male to 1 female, and no one is married to anyone living outside the village.)

3. Spring will be here soon and I want to plant some flowers in my garden where the length is longer than the width by 1 m.

   $\frac{1}{3}$ of the garden will be planted with Sunflowers,

   $\frac{1}{4}$ of the garden will be planted with Brown-Eyed Susans,

   $\frac{1}{5}$ of the garden is to be planted with Columbine,

   $1\ m^2$ of the garden is to be planted with Foxglove

   and the last $\frac{1}{6}$ of the garden with Geraniums.

   Can you help me work out the length and width of my garden?

Eldest	Middle	Youngest	Sum
72	1	1	74
36	2	1	39
24	3	1	28
18	4	1	23
18	2	2	22
12	6	1	19
12	3	2	17
9	8	1	18
9	4	2	15
8	3	3	14
6	6	2	14
6	4	3	13

From the table, there are two possible sets of ages where the sum of their ages is 14. The two sets are as follows:

Eldest	Middle	Youngest
[8]	[3]	[3]
6	6	2

Since the man had an eldest daughter, she was 8 years old and the other two daughters were each 3 years old.

2. (a) 136 pages (b) 1137 pages

Topic 3: Fractions

1. (a) $2\frac{1}{3}$ (b) $3\frac{3}{4}$ (c) $2\frac{1}{5}$
   (d) $4\frac{2}{3}$ (e) $4\frac{4}{9}$ (f) $4\frac{1}{2}$
   (g) $1\frac{3}{4}$ (h) $2\frac{1}{3}$ (i) $5\frac{1}{5}$
   (j) $12\frac{1}{6}$ (k) $3\frac{2}{5}$ (l) $20\frac{3}{7}$
2. (a) 2 (b) $\frac{1}{4}$ (c) $\frac{5}{13}$
   (d) $1\frac{1}{2}$ m (e) $\frac{5}{8}$ kg (f) $\frac{1}{3}$ ℓ
   (g) $2\frac{3}{4}$ yd
3. (a) $\frac{2}{3}$ (b) $1\frac{1}{4}$ (c) $1\frac{1}{2}$
   (d) $1\frac{7}{12}$ (e) $1\frac{7}{40}$ (f) $1\frac{5}{12}$
   (g) $1\frac{5}{24}$ (h) $\frac{31}{40}$
4. (a) $\frac{1}{9}$ (b) $\frac{7}{24}$ (c) $\frac{7}{18}$
   (d) $\frac{7}{12}$ (e) $\frac{1}{4}$ (f) $\frac{5}{6}$
   (g) $\frac{14}{15}$ (h) $\frac{19}{24}$
5. (a) $2\frac{5}{6}$ (b) $1\frac{9}{10}$ (c) $4\frac{1}{4}$
   (d) $4\frac{3}{8}$ (e) $5\frac{1}{9}$ (f) $5\frac{7}{15}$
   (g) $7\frac{8}{15}$ (h) $5\frac{3}{20}$
6. (a) $2\frac{3}{10}$ (b) $1\frac{4}{9}$ (c) $1\frac{5}{8}$
   (d) $1\frac{5}{12}$ (e) $1\frac{3}{4}$ (f) $3\frac{1}{2}$
   (g) $1\frac{1}{5}$ (h) $2\frac{11}{24}$
7. (a) $\frac{3}{8}$ (b) $7\frac{1}{12}$ h (c) $\frac{2}{9}$
   (d) $1\frac{13}{24}$ m (e) $1\frac{7}{12}$ h (f) $\frac{13}{15}$
   (g) $3\frac{17}{24}$ m (h) $5\frac{17}{20}$ ℓ
8. (a) 80 (b) 40 (c) 750
   (d) 15 (e) 600 (f) 2
   (g) 4 (h) 55
9. (a) 3 km 125 m (b) 4 ft 3 in.
   (c) 1 lb 6 oz (d) 5 h 45 min
   (e) 2 years 2 months
   (f) 6 min 54 s (g) 7 days 10 h
   (h) 3 gal 2 qt
10. (a) 3250 ml (b) $2\frac{7}{8}$ kg
    (c) $1\frac{2}{3}$ days (d) Clarissa
11. (a) $\frac{3}{8}$ (b) $\frac{9}{20}$ (c) $\frac{7}{12}$
    (d) $\frac{11}{24}$ (e) $\frac{3}{20}$ (f) $\frac{5}{6}$
    (g) $\frac{1}{32}$
12. (a) (i) $\frac{3}{4}$ (ii) $\frac{1}{4}$

(b) (i) $\frac{3}{25}$ (ii) $\frac{22}{25}$

(c) (i) $\frac{2}{5}$ (ii) $\frac{3}{5}$

13. (a) $\frac{1}{21}$ (b) $\frac{1}{12}$ (c) $\frac{12}{25}$

(d) $\frac{5}{12}$ (e) 12 (f) $\frac{2}{9}$

(g) 9 (h) $\frac{11}{15}$ (i) $\frac{6}{11}$

(j) 3

14. (a) $\frac{3}{4}$kg (b) $\frac{4}{15}$ m

(c) $\frac{1}{10}$h (d) $\frac{5}{16}\ell$

15. (a) $\frac{1}{5}$ m^2 (b) $\frac{3}{5}$ qt

(c) $\frac{15}{64}$ kg (d) $\frac{1}{6}$ km

16. (a) $\frac{1}{7}$ (b) $\frac{1}{6}$ (c) $\frac{1}{2}$

(d) $\frac{3}{40}$ (e) $\frac{3}{34}$ (f) $\frac{3}{16}$

(g) $\frac{1}{24}$ (h) $\frac{8}{25}$ (i) $\frac{1}{36}$

(j) $\frac{2}{15}$

17. (a) $\frac{1}{4}\ell$ (b) $\frac{1}{18}$ m (c) $\frac{3}{35}$

(d) $\frac{1}{18}$ lb (e) $\frac{5}{48}$

Word Problems

1. 16 cm
2. \$140
3. 252 stamps
4. \$500
5. \$800
6. 84 pieces of candy
7. 42 kg
8. 48 in.
9. $\frac{1}{2}$
10. 180 guests
11. 133 coins
12. 381 girls, 508 boys
13. (a) $\frac{1}{5}$ (b) 75 male carps
14. (a) 25 girls (b) 85 students
15. 1680 g

Take the Challenge!

1. $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}=\frac{13}{12}$

$221 \times \frac{12}{13} = 204$

The house number is 204.

2. $\frac{2}{3}$ of the men = $\frac{3}{5}$ of the women.

Hence $\frac{6}{9}$ of the men = $\frac{6}{10}$ of the women.

Units of unmarried men + units of unmarried women = 6 + 6. Total units = 9 + 10.

Fraction of the population that are married

$= \frac{6+6}{9+10} = \frac{12}{19}$

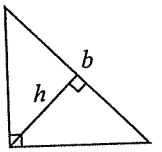
3. $\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}=\frac{57}{60}$

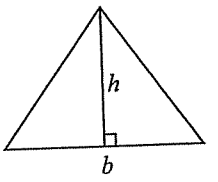
$\frac{3}{60} = \frac{1}{20}$ of garden $\rightarrow$ 1 m^2

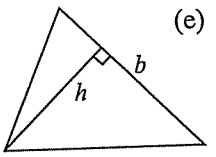
Garden $\rightarrow$ 20 m^2

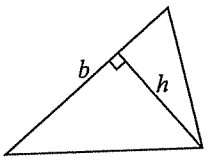
The length is 5 m and the width is 4 m.

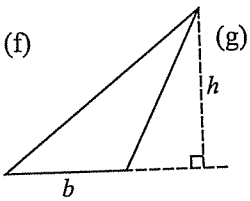
Topic 4: Area of Triangle

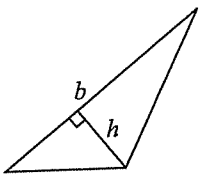
1. (b) 

(c) 

(d) 

(e) 

(f) 

(g) 

(h)