MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

What part of the object or set of objects is shaded?

1) 

![Image of a circle divided into sections, with some sections shaded.]

A) \( \frac{2}{5} \)

B) \( \frac{5}{2} \)

C) \( \frac{3}{2} \)

D) \( \frac{2}{3} \)

2) 

![Image of a circle divided into sections, with some sections shaded.]

A) \( \frac{3}{8} \)

B) \( \frac{5}{8} \)

C) \( \frac{3}{5} \)

D) \( \frac{5}{3} \)

3) 

![Images of two rectangular objects, one with three sections shaded and one with two sections shaded.]

A) \( \frac{5}{3} \)

B) \( \frac{5}{1} \)

C) \( \frac{5}{6} \)

D) \( \frac{1}{5} \)

4) 

![Images of two circles, one completely shaded and one with one section shaded.]

A) \( \frac{1}{7} \)

B) \( \frac{7}{8} \)

C) \( \frac{7}{4} \)

D) \( \frac{3}{4} \)
What part of the set of objects is shaded?

6)

7)

8)

5)

A) \( \frac{11}{6} \)
B) \( \frac{11}{12} \)
C) \( \frac{1}{11} \)
D) \( \frac{11}{1} \)
9) There are 6 circles and 8 squares. What is the ratio of the circles to the squares?
A) $\frac{6}{8}$  
B) $\frac{2}{8}$  
C) $\frac{2}{6}$  
D) $\frac{8}{2}$

10) There are 4 rectangles, 6 circles, 4 triangles, and 2 squares. What is the ratio of the triangles to the total number of shapes?
A) $\frac{4}{10}$  
B) $\frac{6}{4}$  
C) $\frac{4}{6}$  
D) $\frac{6}{10}$

11) There are 3 triangles and 3 rectangles. What is the ratio of the triangles to the total number of shapes?
A) $\frac{3}{5}$  
B) $\frac{5}{2}$  
C) $\frac{2}{3}$  
D) $\frac{2}{5}$

Provide an appropriate response.

12) There are 6 women and 5 men on a committee. What is the ratio of the women to men?
A) $\frac{6}{5}$  
B) $\frac{5}{11}$  
C) $\frac{5}{6}$  
D) $\frac{6}{11}$

13) There are 12 people on a committee, and 9 of them are women. What is the ratio of the number of men to the total number of people on the committee?
A) $\frac{9}{3}$  
B) $\frac{3}{12}$  
C) $\frac{9}{12}$  
D) $\frac{3}{9}$
14) There are 13 people on a committee, and 5 of them are women. What is the ratio of the number of women to the number of men on the committee?  
A) $\frac{8}{13}$  
B) $\frac{5}{13}$  
C) $\frac{8}{5}$  
D) $\frac{5}{8}$

15) What part of an inch is highlighted?  
A) $\frac{16}{26}$  
B) $\frac{26}{16}$  
C) $\frac{26}{32}$  
D) $\frac{32}{26}$

16) Give fraction notation for the amount of gas (a) in the tank and (b) used from a full tank.  
A) (a) $\frac{5}{8}$; (b) $\frac{3}{8}$  
B) (a) $\frac{4}{10}$; (b) $\frac{6}{10}$  
C) (a) $\frac{6}{10}$; (b) $\frac{4}{10}$  
D) (a) $\frac{3}{8}$; (b) $\frac{5}{8}$
17) A company with 1080 total employees prepares the following analysis for the length of time its employees have been with the company. Use the table to answer the question.

### Analysis of the number of years employees have been with their current employer

<table>
<thead>
<tr>
<th>Employees working more than 6 years</th>
<th>Employees working 6 years or less but more than 4 years</th>
<th>Employees working 4 years or less but more than 2 years</th>
<th>Employees working 2 years or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>400</td>
<td>305</td>
<td>225</td>
</tr>
</tbody>
</table>

What is the ratio of the number of employees working 6 years or less but more than 4 years to the total number of employees?

A) \( \frac{1080}{150} \)  
B) \( \frac{150}{1080} \)  
C) \( \frac{1080}{400} \)  
D) \( \frac{400}{1080} \)

Simplify.

18) \( \frac{0}{16} \)

A) 1  
B) Not defined  
C) 16  
D) 0

19) \( \frac{19}{0} \)

A) 19  
B) \( \frac{1}{19} \)  
C) Not defined  
D) 0

20) \( \frac{553}{0} \)

A) \( \frac{1}{553} \)  
B) 0  
C) 553  
D) Not defined

21) \( \frac{25}{25} \)

A) Not defined  
B) 25  
C) 0  
D) 1

22) \( \frac{265}{1} \)

A) 1  
B) 0  
C) 265  
D) Not defined
23) \( \frac{13 - 13}{273} \)

A) \( \frac{1}{273} \)  
B) 13  
C) Not defined  
D) 0

Multiply.

24) \( \frac{1}{4} \times \frac{1}{8} \)

A) \( \frac{2}{12} \)  
B) \( \frac{1}{12} \)  
C) \( \frac{2}{32} \)  
D) \( \frac{1}{32} \)

25) \( \frac{3}{7} \cdot \frac{1}{4} \)

A) \( \frac{1}{28} \)  
B) \( \frac{4}{11} \)  
C) \( \frac{3}{28} \)  
D) \( \frac{3}{11} \)

26) \( \frac{3}{4} \cdot \frac{3}{5} \)

A) \( \frac{9}{20} \)  
B) \( \frac{1}{20} \)  
C) \( \frac{6}{9} \)  
D) \( \frac{3}{20} \)

27) \( \frac{4}{7} \cdot \frac{5}{9} \)

A) \( \frac{20}{63} \)  
B) \( \frac{9}{16} \)  
C) \( \frac{20}{35} \)  
D) \( \frac{9}{63} \)

28) \( \frac{8}{41} \cdot \frac{9}{43} \)

A) \( \frac{72}{110} \)  
B) \( \frac{72}{1763} \)  
C) \( \frac{49}{1000} \)  
D) \( \frac{49}{110} \)

29) \( \frac{1}{5} \times 2 \)

A) \( \frac{1}{10} \)  
B) \( \frac{2}{10} \)  
C) \( \frac{3}{5} \)  
D) \( \frac{2}{5} \)

30) \( \frac{3}{5} \cdot 1 \)

A) \( \frac{4}{5} \)  
B) \( \frac{3}{5} \)  
C) \( \frac{4}{6} \)  
D) 1

31) \( \frac{4}{9} \cdot 8 \)

A) \( \frac{4}{72} \)  
B) \( \frac{32}{9} \)  
C) \( \frac{12}{9} \)  
D) \( \frac{32}{72} \)
32) $\frac{43}{7} \times \frac{3}{7}$

A) $\frac{46}{7}$  
B) $\frac{129}{7}$  
C) $\frac{129}{301}$  
D) $\frac{3}{301}$

33) $\frac{2}{5} \cdot 40$

A) $\frac{42}{5}$  
B) $\frac{80}{200}$  
C) $\frac{80}{5}$  
D) $\frac{2}{200}$

Solve.

34) Each piece of pizza is $\frac{1}{11}$ of the pizza. What fraction of the pizza is $\frac{1}{2}$ of a piece?

A) $\frac{1}{13}$  
B) $\frac{1}{22}$  
C) $\frac{2}{13}$  
D) $\frac{2}{22}$

35) One of 15 initial applicants for a certain job will receive a first interview. Of those who receive a first interview, one of 13 will receive a second interview. What fraction of initial applicants will receive a second interview?

A) $\frac{1}{28}$  
B) $\frac{2}{195}$  
C) $\frac{1}{195}$  
D) $\frac{2}{28}$

36) $\frac{1}{5}$ of Mary’s earned income is deducted from her paycheck for withholdings. $\frac{3}{4}$ of the withholdings are for taxes. What fraction of Mary’s earned income is deducted for taxes?

A) $\frac{3}{20}$  
B) $\frac{1}{5}$  
C) $\frac{4}{9}$  
D) $\frac{4}{15}$

37) It takes $\frac{5}{2} \text{ lb}$ of flour to make a cake. How much flour is needed to make 4 cakes?

A) $\frac{20}{20} \text{ lb}$  
B) $\frac{20}{5} \text{ lb}$  
C) $\frac{5}{20} \text{ lb}$  
D) $\frac{9}{5} \text{ lb}$

38) Julia preheated her oven for 25 minutes. What fraction of an hour was this? (1 hour = 60 min)

A) $\frac{25}{30} \text{ hr}$  
B) $\frac{25}{60} \text{ hr}$  
C) $\frac{24}{60} \text{ hr}$  
D) $\frac{60}{25} \text{ hr}$

39) Mr. Rivera opened a package of 25 drinking cups for his restaurant. During the day, 4 cups were used. What fraction of the package of cups was used?

A) $\frac{4}{21}$ of the package  
B) $\frac{4}{25}$ of the package

C) $\frac{25}{4}$ of the package  
D) $\frac{21}{1}$ of the package
Find another name for the given number, but with the denominator indicated.

40) \( \frac{9}{15} = \frac{?}{105} \)
   A) \( \frac{135}{105} \)  B) \( \frac{9}{105} \)  C) \( \frac{945}{1575} \)  D) \( \frac{63}{105} \)

41) \( \frac{16}{6} = \frac{?}{12} \)
   A) \( \frac{96}{12} \)  B) \( \frac{192}{72} \)  C) \( \frac{32}{12} \)  D) \( \frac{16}{12} \)

42) \( \frac{11}{16} = \frac{?}{256} \)
   A) \( \frac{11}{256} \)  B) \( \frac{121}{256} \)  C) \( \frac{176}{256} \)  D) \( \frac{27}{256} \)

Simplify.

43) \( \frac{8}{12} \)
   A) \( \frac{3}{4} \)  B) \( \frac{4}{6} \)  C) \( \frac{2}{12} \)  D) \( \frac{2}{3} \)

44) \( \frac{24}{8} \)
   A) \( \frac{3}{8} \)  B) 3  C) \( \frac{6}{2} \)  D) \( \frac{1}{3} \)

45) \( \frac{24}{42} \)
   A) \( \frac{4}{7} \)  B) \( \frac{4}{6} \)  C) \( \frac{6}{7} \)  D) \( \frac{24}{42} \)

46) \( \frac{22}{28} \)
   A) \( \frac{22}{28} \)  B) \( \frac{11}{2} \)  C) \( \frac{11}{14} \)  D) \( \frac{2}{14} \)

47) \( \frac{465}{345} \)
   A) \( \frac{115}{155} \)  B) \( \frac{31}{69} \)  C) \( \frac{155}{115} \)  D) \( \frac{31}{23} \)

Use = or \( \neq \) for \( \Box \) to write a true sentence.

48) \( \frac{4}{6} \quad \Box \quad \frac{12}{18} \)
   A) \( \neq \)  B) =
Use the circle graph to answer the question.

52) What do teachers do during their summer vacations? The responses of 100 teachers are organized in the circle graph below. Simplify the fraction representing the number of teachers who freelance.

What Teachers Do Over Their Summer Vacations

Freelance \(\frac{16}{100}\)

Travel \(\frac{8}{100}\)

Volunteer \(\frac{2}{100}\)

Tutor \(\frac{24}{100}\)

Pursue a hobby \(\frac{18}{100}\)

Teach summer school \(\frac{32}{100}\)

A) \(\frac{3}{20}\)  B) \(\frac{1}{5}\)  C) \(\frac{4}{25}\)  D) \(\frac{9}{50}\)
53) How did a family spend a total of 20,000 miles driving to different locations for various purposes over the course of one year? Simplify the fraction representing the number of Work miles driven.

A) $\frac{1}{50}$  
B) $\frac{1}{25}$  
C) $\frac{8}{25}$  
D) $\frac{3}{25}$

54) How did a family spend a total of 20,000 miles driving to different locations for various purposes over the course of one year? Simplify the fraction representing the number of School/church miles driven.

A) $\frac{2}{25}$  
B) $\frac{1}{25}$  
C) $\frac{4}{25}$  
D) $\frac{1}{50}$

Multiply and simplify.

55) $\frac{1}{4} \cdot \frac{2}{5}$

A) $\frac{1}{10}$  
B) $\frac{2}{7}$  
C) $\frac{2}{20}$  
D) $\frac{1}{3}$
56) \[
\frac{19}{5} \cdot \frac{15}{14}
\]
A) \(\frac{34}{19}\)  
B) \(\frac{285}{70}\)  
C) \(\frac{57}{14}\)  
D) \(\frac{14}{15}\)

57) \[
\frac{3}{16} \cdot \frac{8}{16}
\]
A) \(\frac{3}{32}\)  
B) \(\frac{3}{8}\)  
C) \(\frac{11}{32}\)  
D) \(\frac{3}{4}\)

58) \[
\frac{19}{32} \cdot \frac{4}{9}
\]
A) \(\frac{76}{288}\)  
B) \(\frac{19}{72}\)  
C) \(\frac{23}{288}\)  
D) \(\frac{23}{44}\)

59) \(27 \cdot \frac{5}{9}\)
A) 15  
B) \(\frac{367}{90}\)  
C) 20  
D) \(\frac{135}{9}\)

60) \(\frac{1}{6} \cdot 27\)
A) \(\frac{27}{27}\)  
B) \(\frac{1}{162}\)  
C) \(\frac{9}{2}\)  
D) \(\frac{27}{162}\)

61) \(\frac{3}{5} \cdot 350\)
A) 180  
B) 210  
C) \(\frac{1050}{5}\)  
D) \(\frac{122503}{5}\)

Solve.

62) There are 40 students in Jose’s class. \(\frac{1}{4}\) of the students are science majors. How many students are science majors?
A) 30 students  
B) 40 students  
C) 8 students  
D) 10 students

63) When Maria finished medical school she owed $60,000 in student loans. She repaid \(\frac{2}{3}\) of the total amount within two years of graduating. How much did she repay within two years of graduating?
A) $44,000  
B) $40,000  
C) $4000  
D) $36,000

64) A storehouse stores 720 different inventory items. \(\frac{3}{10}\) of these items are perishable. How many of the inventory items are perishable?
A) 219 items  
B) 72 items  
C) 216 items  
D) 213 items
65) A recipe calls for $\frac{2}{5}$ cup of milk. How much milk should be used to make $\frac{1}{2}$ of the recipe?  
A) $\frac{3}{10}$ cup  
B) $\frac{1}{10}$ cup  
C) $\frac{1}{5}$ cup  
D) $\frac{2}{5}$ cup

66) On a map, 1 in. represents 300 miles. How much does $\frac{1}{4}$ in. represent?  
A) 1200 mi  
B) 75 mi  
C) 65 mi  
D) 85 mi

67) A company has 37,800 employees. Of these, $\frac{1}{4}$ drive alone to work, $\frac{1}{5}$ car pool, $\frac{1}{9}$ use public transportation, $\frac{1}{10}$ cycle, and the remainder use other methods of transportation. How many employees use each method of transportation?  
A) Drive alone: 9450; car pool: 7560; public transportation: 4200; cycle: 3780; other: 3780  
B) Drive alone: 945; car pool: 7560; public transportation: 4200; cycle: 3780; other: 12,810  
C) Drive alone: 9550; car pool: 7560; public transportation: 4100; cycle: 3780; other: 1000  
D) Drive alone: 9450; car pool: 7560; public transportation: 4200; cycle: 3780; other: 12,810

68) The pitch of a screw is the distance between threads. With each complete rotation of the screw, it goes in or out a distance equal to its pitch. How far will a screw with a pitch of $\frac{2}{35}$ in. go into a piece of wood when it is turned 10 complete rotations clockwise?  
A) $\frac{4}{7}$ in.  
B) $\frac{1}{175}$ in.  
C) $\frac{7}{4}$ in.  
D) $\frac{1}{7}$ in.

Find the reciprocal.

69) $\frac{3}{4}$  
A) 3  
B) $\frac{1}{3}$  
C) $\frac{3}{1}$  
D) $\frac{1}{4}$

70) 19  
A) 19  
B) 1  
C) $\frac{1}{19}$  
D) $\frac{19}{1}$

71) $\frac{1}{20}$  
A) 20  
B) 1  
C) 0  
D) $\frac{1}{20}$

72) $\frac{5}{3}$  
A) $\frac{3}{1}$  
B) 3  
C) $\frac{1}{5}$  
D) $\frac{3}{5}$
Divide and simplify.

73) \( \frac{5}{6} + \frac{10}{3} \)
   - A) \( \frac{25}{9} \)
   - B) 4
   - C) \( \frac{9}{25} \)
   - D) \( \frac{1}{4} \)

74) \( \frac{4}{3} + \frac{1}{6} \)
   - A) \( \frac{2}{9} \)
   - B) \( \frac{1}{8} \)
   - C) \( \frac{9}{2} \)
   - D) 8

75) \( \frac{25}{2} ÷ 5 \)
   - A) \( \frac{125}{2} \)
   - B) 5
   - C) \( \frac{2}{5} \)
   - D) \( \frac{5}{2} \)

76) \( 14 ÷ \frac{2}{5} \)
   - A) 35
   - B) \( \frac{28}{5} \)
   - C) \( \frac{1}{35} \)
   - D) 7

Solve.

77) A land developer wants to develop 9 acres of land. Each lot in the development is to be \( \frac{1}{2} \) of an acre. How many lots will the land developer have in the 9 acres?
   - A) 2 lots
   - B) \( \frac{9}{2} \) lot(s)
   - C) \( \frac{1}{6} \) lot
   - D) 18 lots

78) A child’s dose of medicine is \( \frac{1}{6} \) of a pre-measured dose cup. If the bottle of medicine is the size of 9 dose cups, how many children’s doses are there in the bottle?
   - A) 9 \( \frac{1}{6} \) doses
   - B) 15 doses
   - C) 54 doses
   - D) 1\( \frac{1}{2} \) dose(s)

79) Joe has traveled \( \frac{8}{9} \) of his total trip. He has traveled 1040 miles so far. How many more miles does he have to travel?
   - A) 130 miles
   - B) None of these
   - C) 1170 miles
   - D) 115\( \frac{5}{9} \) miles

80) Allen has traveled \( \frac{4}{5} \) of his total trip. He has traveled 32 miles so far. How many more miles does he have to travel?
   - A) None of these
   - B) 8 miles
   - C) 40 miles
   - D) 6\( \frac{2}{5} \) miles
81) A piece of cheese weighing $\frac{4}{7}$ lb is to be divided into 8 equal portions. What will be the weight of each portion?

A) $\frac{1}{14}$ lb  
B) $\frac{32}{7}$ lb  
C) 14 lb  
D) $\frac{2}{7}$ lb

82) A piece of cable which is $\frac{4}{5}$ m long is to be cut into pieces $\frac{1}{10}$ m long. How many pieces will there be?

A) $\frac{1}{8}$ piece  
B) 40 pieces  
C) 8 pieces  
D) 50 pieces

83) A land developer wants to develop 6 acres of land. Each lot in the development is to be $\frac{2}{13}$ of an acre. How many lots will the land developer have in the 6 acres?

A) 39 lots  
B) $4 \frac{1}{3}$ lots  
C) $12 \frac{12}{13}$ lot(s)  
D) $1 \frac{1}{13}$ lot

84) A child’s dose of medicine is $\frac{1}{6}$ of a pre-measured dose cup. If the bottle of medicine is the size of 8 dose cups, how many children’s doses are there in the bottle?

A) 48 doses  
B) 14 doses  
C) $8 \frac{1}{6}$ doses  
D) $1 \frac{1}{3}$ dose(s)

85) Jeremy has traveled $\frac{7}{8}$ of his total trip. He has traveled 763 miles so far. How many more miles does he have to travel?

A) None of these  
B) 109 miles  
C) 872 miles  
D) $95 \frac{3}{8}$ miles

86) Darren has traveled $\frac{7}{8}$ of his total trip. He has traveled 42 miles so far. How many more miles does he have to travel?

A) 5 $\frac{1}{4}$ miles  
B) 48 miles  
C) 6 miles  
D) None of these

87) A piece of cheese weighing $\frac{4}{9}$ lb is to be divided into 10 equal portions. What will be the weight of each portion?

A) $\frac{5}{18}$ lb  
B) $\frac{40}{9}$ lb  
C) $\frac{45}{2}$ lb  
D) $\frac{2}{45}$ lb
88) A piece of cable which is \( \frac{3}{4} \) m long is to be cut into pieces \( \frac{1}{12} \) m long. How many pieces will there be?

A) \( \frac{1}{9} \) piece  
B) 9 pieces  
C) 36 pieces  
D) 48 pieces

Provide an appropriate response.

89) Fill in the blank with "always greater than," "sometimes greater than," "always less than, or "can not tell," whichever response is correct. When dividing a fraction by \( \frac{3}{10} \), the answer is ___ the fraction.

A) Cannot tell without knowing the fraction  
B) Always greater than  
C) Sometimes greater than  
D) Always less than

90) Finish the statement with a correct response. To divide two fractions one needs to:

A) Invert the second fraction (divisor) and multiply.  
B) Invert the second fraction (divisor), add the numerators and multiply the denominators.  
C) Add the numerators and factor the denominators.  
D) Add the numerators and multiply the denominators.

91) If a fraction simplifies to 1, what, if anything can you conclude about its numerator and denominator?

A) The numerator is 1, the denominator can be anything.  
B) The numerator can be anything, the denominator is 1.  
C) The numerator is smaller than the denominator.  
D) The numerator and denominator are equal.

92) If a fraction simplifies to 0, what, if anything can you conclude about its numerator? What, if anything, can you conclude about its denominator?

A) Numerator is 0, denominator is 0.  
B) Numerator can be anything, denominator is 0.  
C) Numerator is 0, denominator is not 0.  
D) Numerator is 0, denominator is 1.

93) Which, if any, of the following statements are true?

A: If a number is divisible by 9, it must be divisible by 3.  
B: If a number is divisible by 3, it must be divisible by 9.

A) A true, B false  
B) A false, B false  
C) A true, B true  
D) A false, B true
1) A
2) B
3) A
4) C
5) B
6) C
7) A
8) A
9) B
10) D
11) D
12) A
13) B
14) D
15) B
16) D
17) D
18) D
19) C
20) D
21) D
22) C
23) D
24) D
25) C
26) A
27) A
28) B
29) D
30) B
31) B
32) B
33) C
34) B
35) C
36) A
37) B
38) B
39) B
40) D
41) C
42) C
43) D
44) B
45) A
46) C
47) D
48) B
49) A
50) A
Answer Key
Testname: UNTITLED1

51) A
52) C
53) C
54) B
55) A
56) C
57) A
58) B
59) A
60) C
61) B
62) D
63) B
64) C
65) C
66) B
67) D
68) A
69) D
70) C
71) A
72) D
73) D
74) D
75) D
76) A
77) D
78) C
79) A
80) B
81) A
82) C
83) A
84) A
85) B
86) C
87) D
88) B
89) B
90) A
91) D
92) C
93) A