

APPLIED MATHEMATICS 9 & 10 A
(You may use a calculator)

This test covers the following operations:

Number Operations
Comp/Context
Estimation
Measurement
Geometry
Data Analysis
Statistics/Problem Solving
Pre Algebra/Algebra
Problem Solving

Applied Mathematics

1. What is the product of 306 and 15?
 - a. 321
 - b. 4590
 - c. 20.4
 - d. 291
2. What is 12,536 rounded to the nearest thousand?
 - a. 12,000
 - b. 13,000
 - c. 12,500
 - d. 12,600
3. What is the value of the digit 5 in the number 45,782?
 - a. ten
 - b. hundred
 - c. thousand
 - d. ten thousand
4. Sue is selling tickets. One day she sold 86 tickets and 135 another. What is the total number of tickets she sold?
 - a. 221
 - b. 995
 - c. 49
 - d. 231
5. A bus holds 50 passengers. How many buses are needed to carry 270 students on a field trip?
 - a. 3
 - b. 4
 - c. 5
 - d. 6
6. Write the letter choice for the number, one hundred fifty-six thousand thirty-two.
 - a. 156,320
 - b. 15,632
 - c. 156,032
 - d. 156,023
7. In a shipment of 11,268 eggs, 1,319 were broken. How many eggs were not broken?
 - a. 9,949
 - b. 10,49
 - c. 8,949
 - d. 1,319
8. An airplane traveled 1,824 miles in 3 hours. What was its average speed in miles per hour?
 - a. 500 miles per hour
 - b. 554 miles per hour
 - c. 608 miles per hour
 - d. 723 miles per hour

9. Rosa came to school with 18 pencils. She lost 8 of them, then she was given 10, and then she gave 6 to friends in class. How many did she have left?
- a. 13 c. 15
b. 14 d. 16
10. Which two fractions are equivalent?
- a. $\frac{3}{4}$ and $\frac{9}{12}$ b. $\frac{4}{8}$ and $\frac{1}{4}$
c. $\frac{4}{8}$ and $\frac{20}{36}$ b. $\frac{2}{5}$ and $\frac{3}{4}$
11. Ms. Smith bought $\frac{1}{2}$ pound of apples, $\frac{3}{4}$ pound of grapes, and $\frac{1}{3}$ pound of lemons. How many pounds of fruit did she buy?
- a. $1 \frac{2}{5}$ b. 2
c. $1 \frac{7}{12}$ c. $2 \frac{1}{8}$
12. Bill spent $\frac{2}{3}$ of an hour swimming and $\frac{5}{6}$ of an hour jogging. How much longer did he jog than swim?
- a. $\frac{1}{6}$ b. $\frac{1}{2}$
c. $\frac{1}{3}$ d. $\frac{2}{5}$
13. Which number should appear to complete the following sequence?
312, 315, 318, __, 324, 327
- a. 319
b. 320
c. 321
d. 323
14. Arrange the following numbers in order from least to the greatest.
3.45, 4.05, 4.54, 3.02, 23.0
- a. 23.0, 3.45, 3.02, 4.05, 4.54
b. 23.0, 3.02, 3.45, 4.05, 4.54
c. 3.02, 3.45, 4.05, 4.54, 23.0
d. 23.0, 3.45, 3.02, 4.05, 4.54
15. Which of the following number sentence is true?
- a. $3.456 < 3.82$
b. $6.32 > 7.241$
c. $12.09 > 20.3$
d. $1.08 < 1.009$
16. Mr. Jones spent \$34.50 on dinner and left a 15% tip. How much money did he spend in the restaurant all together?
- a. \$34.50
b. \$5.18
c. \$39.68
d. \$41.52
17. A baseball team won only 20 percent of the games it played. If it played 25 games, how many games did it win?
- a. 12
b. 9
c. 8
d. 5

18. Mrs. Brown bought a video cassette recorder for \$450. She made a down payment of \$50 and agreed to pay the balance in monthly installments of \$40. How many monthly payments will Mrs. Brown make?

- a. 5
- b. 10
- c. 15
- d. 20

19. On a hike Mike walked 5 miles in 2 hours. At this rate how far will he walk in 7 hours?

- a. 14.5
- b. 14
- c. 17.5
- d. 17

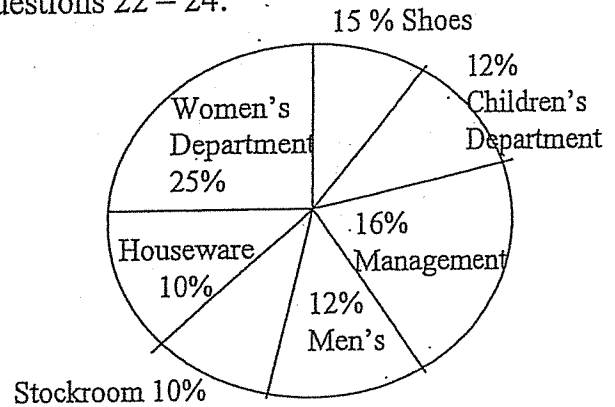
20. On a map, 1 centimeter represents 10 kilometers. If two cities are 1.5 centimeters apart on the map, what is the actual distance between them in kilometers?

- a. 10
- b. 15
- c. 20
- d. 25

21. If a used pencil measures 9.32 centimeters. How long is it in millimeters?

- (1cm = 10mm)
- a. .0932 mm
 - b. 90.32 mm
 - c. 93.2 mm
 - d. 932 mm.

The Circle Graph shows the percentage of employees working in each area of a department store. There are 200 total employees. Study the graph and answer questions 22 – 24.



22. Which 2 departments employ 31% of the employees?

- a. Children's and Men's
- b. Houseware and Stockroom
- c. Houseware and Management
- d. Management and shoes

23. How many people are employed in the houseware and stockroom departments?

- a. 30
- b. 25
- c. 40
- d. 45

24. Which department employs 50 people?

- a. Women's
- b. Management
- c. Shoes
- d. Children's

25. What is the average of the following list of test scores?
75, 84, 92, 89, 96, 80
- a. 83
 - b. 86
 - c. 89
 - d. 91

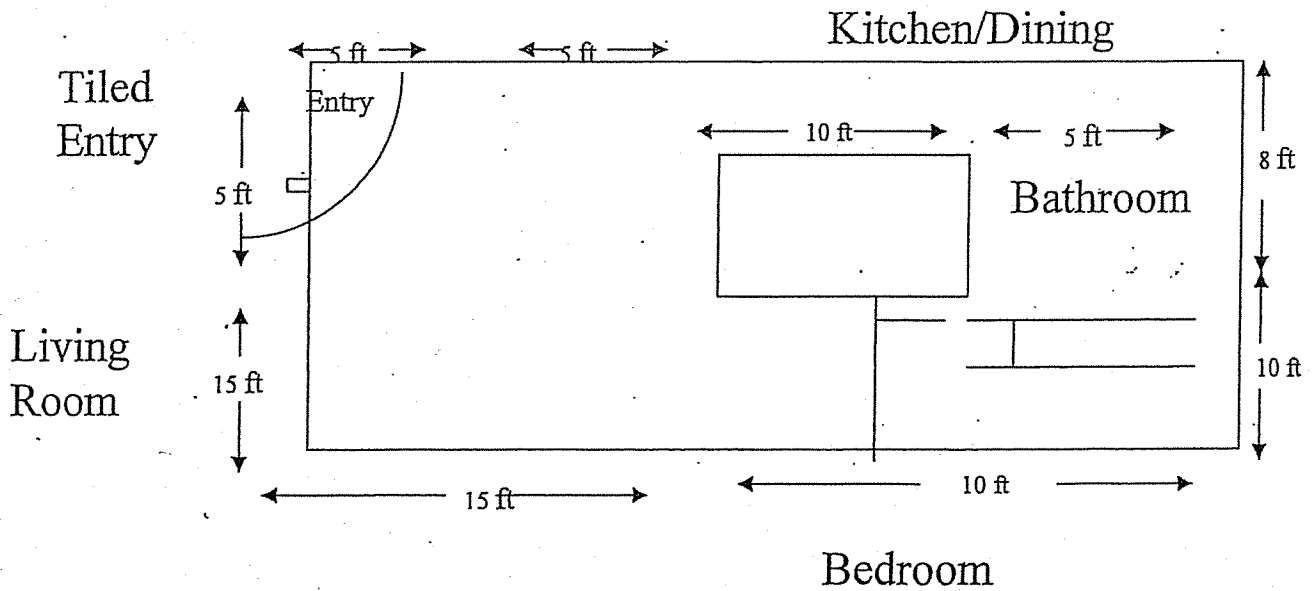
26. What is the selling price of a \$750 stereo if it is on sale at 15% off?
- a. \$112.50
 - b. \$637.50
 - c. \$527.50
 - d. \$700.00

27. The entry has to be retiled. How many square feet of tile will be needed? (see formula page)
- a. 25 ft.²
 - b. 19.625 ft.²
 - c. 81.225 ft.²
 - d. 47.625 ft.²

28. New linoleum is needed on the bathroom floor. Linoleum is on sale at the local building supply center for \$2.25 a square foot. What will it cost to redo the bathroom floor?
- a. \$90.00
 - b. \$100.00
 - c. \$115.00
 - d. \$125.00

Before the new tenants can move into an apartment some remodeling must be done.

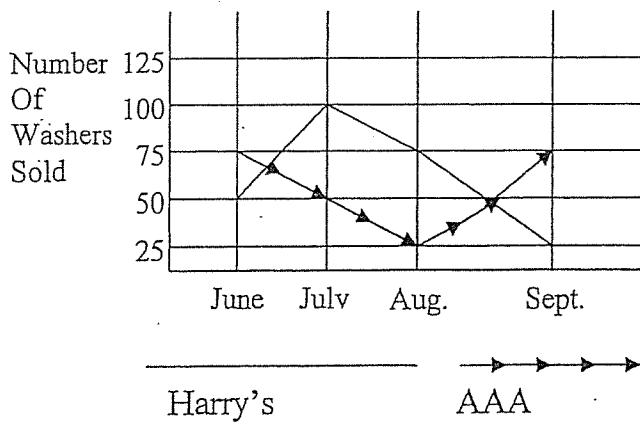
Look at the floor plan below.
Answers questions 27-29.



29. Carpet is on sale. The manager will need to buy 325 sq. ft. to recarpet the apartment. The regular price per square foot is \$12.50; the sale price is \$9.50. How much will the manager save by buying the carpet on sale?
- \$550
 - \$625
 - \$890
 - \$975

30. Manager was charging \$450 a month for a one-bedroom apartment. After the remodel he will charge \$525 a month. He has 6 1-bedroom units. How much more will he make in rent each month?
- \$75.00
 - \$400
 - \$425
 - \$450

This double-line graph shows the number of dishwashers sold during a four month period by Harry's Appliances and AAA Appliances. Study the graph and then do numbers 31 and 32.



31. During which month were the greatest number of dishwashers sold?
- June
 - July
 - August
 - September
32. During which month did Harry's sell twice as many dishwashers as AAA?
- June
 - July
 - August
 - September
33. Which of the following means $7n - 5 = 6$?
- 7 less than 5 times a number is 6
 - 5 less than 6 times a number is 7
 - 5 less than 7 times a number is 6
 - 6 less than 5 times a number is 7
34. Which of the following means $x^2 + 3 = 12$?
- 3 more than a number squared is 12
 - 3 more than 2 times a number is 12
 - 12 less than 3 times a squared number
 - 3 less than a number squared is 12.
35. Which of these is another way to write $3 \times 3 \times 3 \times 3$?
- 12×4
 - $3/4$
 - 3×4

d. 3^4

$$\frac{15}{25}$$

36. What is the sum when 10,325 and 9,672 are rounded to the nearest thousand and then added?

- a. 0.06
- b. 0.006
- c. 0.6
- d. 6.0

- a. 19,000
- b. 20,000
- c. 21,000
- d. 22,000

37. If $8x - 5 = 27$, then $x =$

- a. 4
- b. 5
- c. 6
- d. 7

38. If $8m + 6 = 46$, then $m =$

- a. 3
- b. 4
- c. 5
- d. 6

39. Which value of n will make this number sentence true?

$$4n - 3 < 1$$

- a. 0
- b. 1
- c. 2
- d. 3

40. What is another way to write the following fraction?

$$\frac{29}{7}$$

- a. $3 \frac{8}{7}$
- b. $4 \frac{1}{7}$
- c. $3 \frac{1}{7}$
- d. $4 \frac{3}{7}$

41. What is another way to write the following fraction?

42. The perimeter of a hexagon shaped garden is 125 feet. Three of the sides add up to 74 feet. The other three sides are of equal length. What is the length of these remaining sides.

- a. 23 feet
- b. 10 feet
- c. 12 feet
- d. 17 feet

This is a list of ingredients needed to make 12 cups cakes. Study the list, then do questions 43 – 46.

Ingredients

- 2 ½ cup of Flour
- 2 cup Sugar
- ¾ cup Cocoa
- 1 tsp. Vanilla
- ¼ tsp. Baking Powder
- ½ tsp. Salt
- ½ cup melted Butter
- 1 cup Milk
- 2 eggs

43. How much salt and baking powder together is needed to make 36 cup cakes?

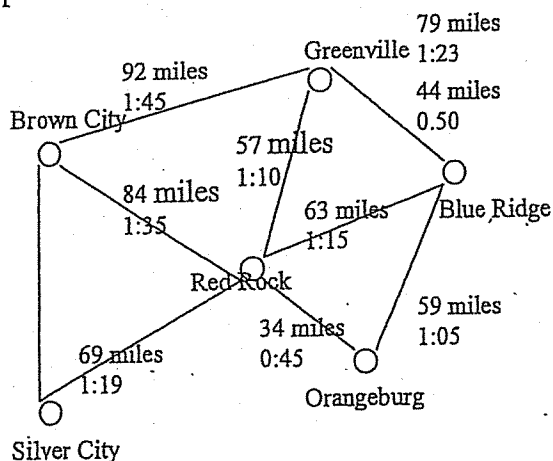
- a. ¾ teaspoons
- b. 1 ½ teaspoons
- c. 2 teaspoons
- d. 2 ¼ teaspoons

44. How many cups of flour are needed to make 6 cup cakes?
 a. 1 cup
 b. $1\frac{1}{4}$ cup
 c. $1\frac{1}{2}$ cup
 d. 2 cups

45. How much butter and milk together is needed to make a double batch of cup cakes?
 a. $1\frac{1}{2}$ cups
 b. 2 cups
 c. $2\frac{1}{2}$ cups
 d. 3 cups

46. How much sugar is needed to make 3 cups cakes?
 a. $\frac{1}{2}$ cup
 b. $\frac{2}{3}$ cup
 c. $\frac{3}{4}$ cup
 d. 1 cup

A team must travel for their away games. Study the following map that shows distance and traveling times between cities. Answer questions 47 – 49.

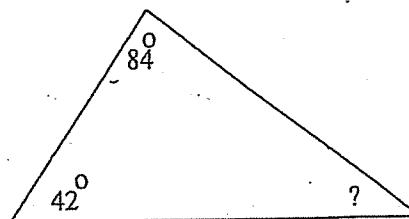


47. What is the distance from Silver City to Greenville when driving through Red Rock?
 a. 116 miles
 b. 126 miles
 c. 136 miles
 d. 146 miles

48. What is the estimated driving time when traveling from Brown City to Blue Ridge through Greenville?
 a. 2 hours
 b. 1 hours 53 minutes
 c. 3 hours
 d. 2 hours 13 minutes

49. To go from Orangeburg to Greenville is it quicker to go through Blue Ridge or Red Rock?
 a. quicker through Blue Ridge
 b. quicker through Red Rock
 c. the same time
 d. not enough information

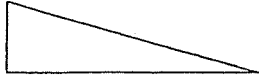
50. The sum of the inside angles of a triangle always equals 180° . What is the measurement of the missing angle?



- a. 180° c. 54°
 b. 126° d. 64°

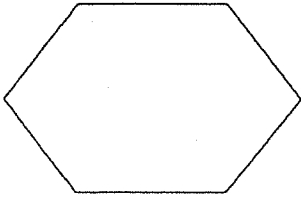
Identify the following shapes

51.



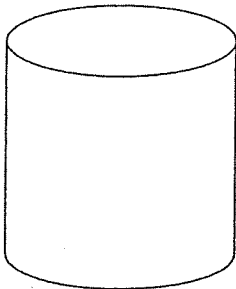
- a. acute triangle
- b. right triangle
- c. scalene triangle
- d. obtuse triangle

52.



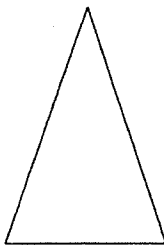
- a. parallelogram
- b. octagon
- c. hexagon
- d. pentagon

53.



- a. cylinder
- b. sphere
- c. trapezoid
- d. parallelogram

54.



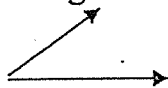
- a. equilateral triangle
- b. obtuse triangle
- c. scalene triangle
- d. isosceles triangle

Following is a list of formulas, definitions, and hints that you should be familiar with for the T.A.B.E. Test.

- Sum, the answer to an addition problem
- Product, the answer to a multiplication problem
- Difference, the answer to a subtraction problem
- Quotient, the answer to a division problem
- Perimeter, the distance around a polygon, the sum of the sides
- Area, length multiplied by the width, $L \times W = A$
- Volume, length multiplied by the width multiplied by the height, $L \times W \times H = V$
- Factor, a number that divides into another number without a remainder, 2 is a factor of 4, 6, 12
- Multiple, a number that is the product of two numbers, 12 is a multiple of 6, 3, 4 and 2
- Diameter of a circle, the distance from one side to the other through the center of the circle
- Radius of a circle, the distance from the center to the outer edge of the circle
- Area of a triangle, base multiplied by height and divided by 2, $\frac{1}{2} bh$
- Circumference, the distance around the outside of a circle, $C = \pi d$ or $C = \pi 2r$, where d is diameter, r is radius, $\pi = 3.14$
- Area of a circle is πr^2

- To find a percent of a number change the percent to a decimal and multiply it by the number
- To find the average of a group of numbers, add the numbers together and divide the total by the number of numbers in the group

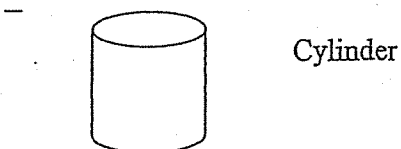
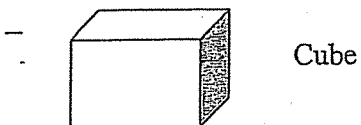
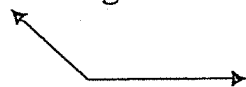
- Acute angle is less than 90°



- Right angle is 90°



- Obtuse angle is more than 90°



- Parallelogram, 4 sided figure whose opposite sides are parallel
- Square, figure with 4 equal sides
- Rectangle parallelogram with four right angles
- Pentagon has 5 sides
- Hexagon has 6 sides
- Octagon has 8 sides
- Triangle has 3 sides
- Right triangle has 1 right angle and 2 acute angles

- Acute triangle has three acute angles
- Obtuse triangle has one obtuse angle and two acute angles
- Equilateral triangle has three equal sides
- Isosceles triangle has two equal sides
- Scalene triangle has three unequal sides
- For a right triangle $a^2 + b^2 = c^2$

- Fractions must have the same denominator to be added or subtracted $\frac{3}{4}$ numerator/denominator
- Parallel lines never cross (never will)
- Perpendicular lines cross at right angles
- $<$ is the symbol for less than, $2 < 3$ 2 is less than 3
- $>$ is the symbol for greater than, $3 > 2$ 3 is greater than 2
- 12 inches in a foot
- 3 feet in a yard
- 10 milli(meters, grams, liters) in a centi(meter, gram, liter)
- 10 centi(meters, grams, liters) in a meter, gram, liter
- 1000 meters, grams, liters, in a kilo(meter, gram, liter)
- 60 seconds in a minute
- 60 minutes in an hour
- 24 hours in a day
- 16 ounces in a pound
- 8 ounces in a cup
- 2 pints in a quart
- 4 quarts in a gallon

Answers to Applied Mathematics

1. **b,**

$$\begin{array}{r} 306 \\ \times 15 \\ \hline 1530 \\ + 306 \\ \hline 4590 \end{array}$$
2. **b,**
 12, 536, 2 is the thousands place, if the number to the right is 5 or more the place is rounded up one if the number is 4 or less the place remains the same.
3. **c,** 5,000 (thousands)
4. **a,**

$$\begin{array}{r} 135 \\ + 86 \\ \hline 221 \end{array}$$
5. **d,** 13,000

$$\begin{array}{r} \underline{5} \text{ 5 full busses and} \\ 50)270 \text{ 1 for the 20 students} \\ \underline{-250} \text{ remaining} = 6 \text{ buses} \\ 20 \end{array}$$
6. **c,** 156,032
7. **a,**

$$\begin{array}{r} 010 \quad 51 \\ \cancel{11268} \\ - \underline{1319} \\ 9949 \end{array}$$
8. **c,**
9. **b,**

$$\begin{array}{r} 18 \\ - 8 \\ \hline 10 \\ + 10 \\ \hline 20 \\ - 6 \\ \hline 14 \end{array}$$
10. **a,**

$$\begin{array}{l} \underline{3} \times 3 = 9 \text{ or } \underline{9} / 3 = 3 \\ 4 \times 3 = 12 \quad 12 / 3 = 4 \end{array}$$
11. **c,** $\frac{1}{2} = \frac{6}{12}$

$$\begin{array}{r} \underline{3} = \underline{9} \\ 4 \quad 12 \\ \underline{1} = \underline{4} \\ + \underline{3} \quad \underline{12} \\ \hline \underline{19} = 1 \underline{7} \\ 12 \quad 12 \end{array}$$
12. **a,** $\frac{5}{6} = \frac{5}{6}$

$$\begin{array}{r} \underline{2} = \underline{4} \\ - \underline{3} \quad \underline{6} \\ \hline \underline{1} \\ 6 \end{array}$$
13. **c,** units are increasing by 3 each times, 312, 315, 318, 321, 324
14. **c,** 3.02, 3.45, 4.05, 4.54, 23.0
15. **a,**

3.456 is less than 3.82

16. c,

$$\begin{array}{r} \$34.50 \\ \times .15 \\ \hline 17250 \\ +3450 \\ \hline \end{array}$$

5.175 round to the nearest penny = 5.18 and add to \$34.50 for a total of \$39.68

17. d, 25

$$\begin{array}{r} \times .20 \\ \hline 5 \text{ games} \end{array}$$

18. b, \$450 then divide 40
- \$50 payments into
\$400 remaining total = 10

$$\begin{array}{r} \underline{10} \\ 40 \overline{) \$400} \\ - 400 \\ \hline 0 \end{array}$$

19. c, 5 miles = x
2 hours 7 hours

Cross multiply, $5(7) = 2(x)$
 $35 = 2x$
 $35 = \cancel{2}x$
 $2 \quad \cancel{2}$
 $17 \frac{1}{2} = x$

20. b, 1 = 1.5 cross multiply
10 x
 $10(1.5) = 1(x)$
 $15.0 = x$

21. c,
 $9.32 \cancel{\text{cm}} \times \frac{10\cancel{\text{mm}}}{1\cancel{\text{cm}}} = 93.2 \text{ mm}$

22. d, 16% Management
+15% Shoes
31%

23. c, 10% Houseware
+10% Stockroom
20%

20% to .20
200 people x .20 = 40 people

24. a, 25% to .25
200 people x .25 = 50 people
Or

$$\begin{array}{r} \underline{.25} \\ 200 \overline{) 50.00} \text{ people} \\ - 400 \\ \hline - 1000 \quad .25 \times 100\% = 25\% \\ - 1000 \quad \text{Women} \\ \hline 0 \end{array}$$

25. b, 75 86
84 6)516
92 -48
89 36
96 -36
+80 0
516

26. b, change 15% to .15
\$750 then, \$750
x .15 - \$112.50
3750 \$637.50
+750
\$112.50

27. **b**, the entry is $\frac{1}{4}$ of a circle
The formula of the area of a circle is $\text{Area} = \pi r^2$, π is 3.14
So entry area = $3.14(5)^2 \times \frac{1}{4}$
 $3.14(25) = 78.5$
 $78.5 \times \frac{1}{4} = 19.625$
28. **a**, the formula for area is length \times width, the bathroom is 8ft \times 5ft.
 $8 \times 5 = 40 \text{ ft.}^2$
 $\begin{array}{r} \$2.25 \\ \times 40 \\ \hline \$90.00 \end{array}$
29. **d**,

Regular price	Sale price
$\begin{array}{r} \$12.50 \\ \times 325 \\ \hline 6250 \\ 2500 \\ +3750 \\ \hline \$4062.50 \end{array}$	$\begin{array}{r} \$9.50 \\ \times 325 \\ \hline 4750 \\ 1900 \\ +2850 \\ \hline \$3087.50 \end{array}$
$\$4062.50 - \$3087.50 = \$975.00$	
30. **d**, $\begin{array}{r} \$525 \\ -\$450 \\ \hline \$75 \end{array}$
 $\$75 \times 6 \text{ apartments} = \450
31. **b**, in July AAA sold 50 + Harry's sold 100 = 150 Dishwashers.
32. **b**, in July Harry's sold 100 dishwashers and AAA sold 50, 100 is twice as many as 50.
33. **c**,
34. **a**,
35. **d**,
36. **b**, 10,325 rounds to 10,000 and 9,675 rounds 10,000.
 $10,000 + 10,000 = 20,000$
37. **a**, $\begin{array}{r} 8x - 5 = 27 \\ +5 \quad +5 \\ \hline 8x = 32 \\ 8 \quad 8 \\ \hline x = 4 \end{array}$
38. **c**, $\begin{array}{r} 8m + 6 = 46 \\ -6 \quad -6 \\ \hline 8m = 40 \\ 8 \quad 8 \\ \hline m = 5 \end{array}$
39. **a**, $4n - 3 < 1$
 $\begin{array}{r} 4n - 3 < 1 \\ +3 \quad +3 \\ \hline 4n < 4 \\ 4 \quad 4 \end{array}$
 $n < 1$, the only choice that is less than 1 given is 0
40. **b**, $\begin{array}{r} \frac{29}{7} \quad \frac{4}{7} \\ 7 \overline{)29} = 4 \frac{1}{7} \\ \underline{-28} \\ 1 \end{array}$
41. **c**, $\begin{array}{r} \frac{15}{25} \quad \frac{.6}{25} \\ 25 \overline{)15.0} \\ \underline{-150} \end{array}$
42. **d**, $\begin{array}{r} 125 \\ -74 \\ \hline 51 \end{array}$ 3 remaining sides divided in 51 ft.
 $\begin{array}{r} 17 \\ 3 \overline{)51} \end{array}$

43. d, $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}$

$\frac{3}{4} \times 3 = \frac{3}{4} \times \frac{3}{1} = \frac{9}{4}$ or $2 \frac{1}{4}$

44. b, 6 is $\frac{1}{2}$ of a batch

$2 \frac{1}{2} \times \frac{1}{2} = \frac{5}{2} \times \frac{1}{2} = \frac{5}{4} = 1 \frac{1}{4}$ tsp

45. d, double = $\times 2$

1 cup milk + $\frac{1}{2}$ cup butter = $1 \frac{1}{2}$

$1 \frac{1}{2} \times 2 = \frac{3}{2} \times \frac{2}{1} = \frac{6}{2} = 3$ cups

46. a, 3 is $\frac{1}{4}$ of a dozen

$\frac{2}{1} \times \frac{1}{4} = \frac{2}{4}$

$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

Reduces to $\frac{1}{2}$ cup

$\frac{-3}{1}$

$\frac{21}{4}$

$\frac{-21}{4}$

0

47. b, 69

$\frac{+57}{126}$ miles

126 miles

48. d, 1:23

$\frac{+50}{1:73}$ 60 minutes in an

hour, 73 minutes is

1:13 + 1:00 = 2:13

1:13 + 1:00 = 2:13

49. c, 1:10 and 1:05

$\frac{+45}{1:55}$

$\frac{+50}{1:55}$ same

1:55

1:55 same

50. c, $84 + 24 = 126$ 180

$\frac{-126}{180}$

51. b,

52. c,

53. a,

54. d,