

FAIRFIELD PUBLIC SCHOOLS  
Fairfield, Connecticut

# MIDDLE SCHOOL MATH PACKET

**GRADE 6**



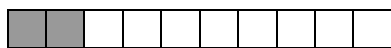
**2012**

## Concept 1- Number Sense: Place Value

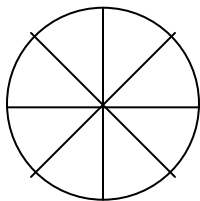
1. Joe has \$436. Chris has \$100 more and Peggy has \$100 less.  
How much money does Chris have?  
How much money does Peggy have?
2. Which means the same as 4,728?
  - a.  $400 + 70 + 20 + 8$
  - b.  $4000 + 70 + 20 + 80$
  - c.  $4000 + 700 + 20 + 8$
  - d.  $4000 + 700 + 200 + 8$
3. Which means the same as 9300?
  - a. 93 thousands
  - b. 93 hundreds
  - c. 93 tens
  - d. 93 ones
4. In which number does the 3 have the greatest value?
  - a. 394
  - b. 3,492
  - c. 4,932
  - d. 9,342

## Concept 2- Number Sense: Pictorial Representations of Numbers

5. The shaded portion of this figure represents the number.
  - a. 2
  - b. .2
  - c. .4
  - d. 1.2



6. Shade in  $\frac{1}{8}$  of this shape.



7. Shade in  $\frac{2}{5}$  of this shape.



**Concept 3- Number Sense: Equivalent Fractions, Decimals and Percents**

8. Name the equivalent fractions.

a.  $3\frac{3}{8}$

b.  $5\frac{1}{4}$

c.  $4\frac{5}{6}$

d.  $2\frac{4}{7}$

9. Bob saw that 24 of the 48 dolphins were jumping. Which is another way to describe this?

- a.  $\frac{1}{2}$  of the dolphins were jumping.
- b.  $\frac{2}{3}$  of the dolphins were jumping.
- c.  $\frac{1}{4}$  of the dolphins were jumping.
- d.  $\frac{12}{36}$  of the dolphins were jumping.

10. Which fraction is equivalent to  $3\frac{3}{5}$ ?

a.  $\frac{11}{5}$

b.  $\frac{18}{5}$

c.  $\frac{45}{5}$

d.  $\frac{12}{5}$

**Concept 4- Number Sense: Order, Magnitude and Rounding of  
Numbers**

11. The Fox family will carpet their home in broadloom carpet. They created this chart to show the prices of the different types of carpeting.

| <b>Carpet</b> | <b>Price</b> |
|---------------|--------------|
| Nubby         | \$5,965      |
| Loopy         | \$5,690      |
| Flat          | \$8,962      |
| Soft          | \$12,695     |

Which shows the carpet prices from GREATEST to LEAST?

- a. \$5,965, \$5,690, \$8,962, \$12,695
- b. \$5,965, \$5,690, \$12,695, \$8,962
- c. \$8,962, \$5,690, \$5,965, \$12,695
- d. \$12,695, \$8,962, 5,965, \$5,690

12. The table below shows some invention developed between 1800 and 1900.

| <b>Invention</b> | <b>Date</b> |
|------------------|-------------|
| Camera           | 1888        |
| Microphone       | 1875        |
| Typewriter       | 1867        |
| Steamboat        | 1807        |
| Sewing Machine   | 1846        |

Which shows the dates arranged from earliest to latest?

- a. camera, microphone, typewriter, steamboat, sewing machine.
- b. steamboat, typewriter, sewing machine, camera, microphone.
- c. camera, sewing machine, typewriter, microphone, steamboat.
- d. steamboat, sewing machine, typewriter, microphone, camera.

13. The chart shows the weights of newborn babies. Which newborn baby is the HEAVIEST?

| Baby  | Weight                |
|-------|-----------------------|
| Fred  | $8\frac{3}{4}$ pounds |
| Ethel | $8\frac{1}{4}$ pounds |
| Lucy  | $7\frac{3}{8}$ pounds |
| Ricky | $8\frac{7}{8}$ pounds |

- a. Fred                      b. Ethel                      c. Lucy                      d. Ricky
14. The fifth grade collected bottles to be recycled. They collected between 3,400 and 4,200 bottles. Which could be the number of bottles they collected?

- a. 2,849  
b. 3,941  
c. 4,630  
d. 4,635

15. Baby Benjamin weighed between  $6\frac{3}{4}$  and  $9\frac{1}{2}$  pounds at birth. Which could be his weight?

- a.  $6\frac{1}{4}$   
b.  $7\frac{3}{4}$   
c.  $9\frac{2}{3}$   
d.  $9\frac{3}{4}$

16. There were 8,582 people at the game. This number is CLOSEST to:

- a. 6,000  
b. 7,000  
c. 8,000  
d. 9,000

17. Jeff bought 3.7 pounds of apples. This amount rounded to the NEAREST whole number is.

- a. 2 pounds
- b. 3 pounds
- c. 4 pounds
- d. 5 pounds

**Concept 5- Operations: Models for Operations**

18. Jim has 31 baseball cards. Bill gave him 9 more. To find out how many cards Jim has now you could

- a. Divide 31 by 9
- b. Subtract 9 from 31
- c. Multiply 31 by 9
- d. Add 9 to 31

19. Jack has 8 cars. He drove around the block three times in each car. To find out how many times he drove around the block you could

- a. Divide 8 by 3
- b. Subtract 3 from 8
- c. Multiply 3 by 8
- d. Add 3 to 8

20. Write a story problem for the number sentence  $48 \div 8 =$

**Concept 6- Operations: Basic Facts**

21. Solve this problem.

$$453 \times 6 =$$

22. Solve this problem.

$$6 \times 7 =$$

23. Solve this problem.

$$72 \div 8 =$$

**Concept 7- Operations: Computation with Whole Numbers and Decimals**

24.  $\begin{array}{r} \$236.78 \\ +563.64 \\ \hline \end{array}$

- a. \$789.65                      b. \$801.42                      c. \$800.42                      d. \$80.42

25. Solve this problem.  
 $\$96.93 - \$3.26 =$

26. Solve this problem.  
 $\$20.00 \times 10 =$

27. Solve this problem.  
 $464 \div 4 =$

**Concept 8- Operations: Computation with Fractions**

28.  $4\frac{6}{8} + 3\frac{5}{8} =$

- a.  $8\frac{3}{16}$   
b.  $7\frac{11}{16}$   
c.  $7\frac{7}{8}$   
d.  $8\frac{3}{8}$

29.  $12\frac{5}{6} - 3\frac{3}{6} =$

- a.  $9\frac{3}{4}$   
b.  $9\frac{1}{3}$   
c.  $8\frac{1}{3}$   
d.  $6\frac{3}{9}$

## **Concept 9- Operations: Solve Word Problems**

30. Solve this problem.

A package of 15 cassette tapes cost \$54.75. Each tape costs the same amount. How much did each tape cost?

31. Solve this problem.

Jesse's basketball card collection was organized in 4 boxes with 120 cards in each box. He hopes to have 3 times as many cards as he has now after his visit to the Basketball Card Collectors' Convention. How many cards does Jesse hope to have after the convention?

32. Sally went to a tag sale and bought a book for \$1.50, a sweater for \$4.50 and a model of a boat for \$6.75. She paid with a twenty-dollar bill. How much change should she receive?

Explain how you solved the problem.

33. The Pizza Connection delivered 4 pizzas to our house. Two cost \$8.50 each. Two cost \$12.95 each. We gave the delivery man \$50.00. How much change should he give us?

Explain how you arrived at your answer.

## **Concept 10- Estimation and Approximation: Numerical Estimation Strategies**

34. Manny and his friends ate  $6\frac{1}{3}$  apples for a snack after school. Which BEST describes this amount?

- a. a little more than 7 apples
- b. a little less than 4 apples
- c. a little more than 6 apples
- d. nearly 7 apples

35. Mitch needs to estimate the difference between 63,759 and 14,898. Which numbers would he use? Explain how you made your ESTIMATE.

36. To ESTIMATE the product of 831 and 216, Emily multiplied  $800 \times 200$ . Will Emily's estimate be MORE or LESS than the actual sum?

- a. More, because she rounded both numbers up
- b. More, because she rounded both numbers down
- c. Less, because she rounded both numbers up
- d. Less, because she rounded both numbers down



**Concept 11- Estimation and Approximation: Estimating Solutions to Problems**

37. The Smiths are going to carpet their family room. The room measures  $10\frac{1}{8}$  feet by  $21\frac{3}{4}$  feet. ABOUT how much carpet will they need?

- a. Fewer than 200 square feet
- b. A little more than 200 square feet
- c. A little less than 300 square feet
- d. More than 300 square feet

38. Mrs. Jones' class recycled  $28\frac{3}{4}$  pounds of newspapers,  $9\frac{1}{2}$  pounds of aluminum cans, and  $12\frac{7}{8}$  pounds of clear glass. ABOUT how many pound of material did they recycle?

- a. Fewer than 50
- b. A little more than 50
- c. A little less than 50
- d. More than 60

39. Dad used  $17\frac{8}{9}$  pounds of sand to fill in the sand box. ABOUT how many pounds of sand are left if he started with 20 pounds?

- a. 2
- b. 3
- c. 4
- d. 5

**Concept 14- Measurement: Time**

40. Tommy began work on his Social Studies project at 4:35 P.M. He had to stop at 6:45 P.M. for dinner. How long had he worked on his project?

- a. 1 hour 10 minutes
- b. 1 hour 45 minutes
- c. 2 hours 10 minutes
- d. 2 hours 45 minutes

41. It takes 120 minutes to drive to the park. How many hours in that?

- a.  $1\frac{1}{2}$  hours
- b.  $2\frac{1}{2}$  hours
- c.  $3\frac{1}{2}$  hours
- d. 2 hours

42. Allie watches television 20 minutes every day. How many hours and minutes does she spend watching television in a week?

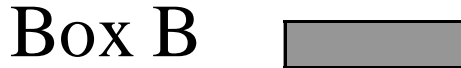
**Concept 15- Measurement: Approximating Measures**

43.) ABOUT how many grasshoppers will fit on the stick?



- a) 2
- b) 5
- c) 8
- d) 20

44. Box A below is ABOUT how many times longer than Box B?



**Concept 16- Measurement: Customary and Metric Measures**

45. A ladder is 72 inches tall. How many feet is that?

46. A piece of ribbon is 300 centimeters. How many meters is that?

- a. 8 meters
- b. 6 meters
- c. 3 meters
- d. 2 meters

47. Use your centimeter ruler to measure the length of the line segment between points A and B to the NEAREST half-centimeter.



48. Use your centimeter ruler to measure the lengths of each side of this rectangle. Label the lengths of the sides and determine the PERIMETER of the rectangle in centimeters.



49. Use your centimeter ruler to measure the lengths of each side of this rectangle. Label the lengths of the sides and determine the AREA of the rectangle in centimeters.



50. The distance between your house and your school is BEST measured in

- a. feet
- b. miles
- c. yards
- d. quarts

**Concept 17- Spatial Relationships and Geometry: Geometric Shapes and Properties**

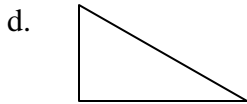
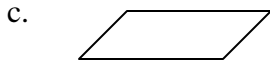
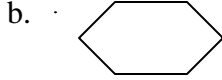
51. Construct and label the following polygons.

Draw one line of symmetry on each figure.

- a. hexagon
- b. pentagon
- c. square
- d. trapezoid
- e. triangle
- f. rectangle
- g. parallelogram

Name the polygons from the above list that are quadrilateral.

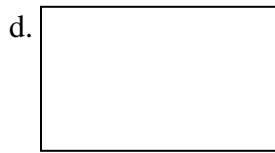
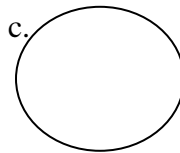
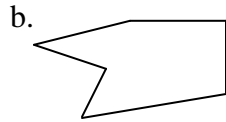
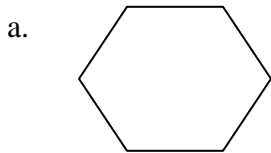
52. Which shape is a quadrilateral?



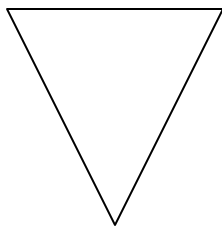
53. Draw a parallelogram. Explain why the figure you drew is a parallelogram.

**Concept 18- Spatial Relationships and Geometry: Spatial Relationships**

54. Which figure **does not** have a line of symmetry?



55. Draw a line of symmetry on the figure that looks like the figure below.



56. Draw 2 pentagons that are congruent.

**Concept 19- Probability and Statistics: Tables, Graphs, and Charts**

| <b>Class</b> | <b>Number of Cans Collected</b> |
|--------------|---------------------------------|
| Mr. Smith    | 652                             |
| Mr. Gomez    | 507                             |
| Ms. Castro   | 553                             |
| Ms. Powell   | 605                             |

57. How many classes collected more than 500 cans?

- a. 1
- b. 2
- c. 3
- d. 4

58. Use this data to make a pictograph.

Skiing Gold Medals Winners from 1896- 1992

Key O = 4 medals

| <b>Country</b> | <b>Number</b> |
|----------------|---------------|
| FRA            | 12            |
| ITA            | 12            |
| AUT            | 24            |
| SWI            | 16            |
| USA            | 8             |
| SWE            | 24            |
| NOR            | 36            |
| GER            | 12            |
| FIN            | 28            |
| SOV            | 28            |
| GDR            | 8             |

59. Use this data to make a bar graph. Include axis labels and title.

| <b>Day</b> | <b>Bake Sale Profit</b> |
|------------|-------------------------|
| Monday     | \$200                   |
| Tuesday    | \$250                   |
| Wednesday  | \$200                   |
| Thursday   | \$150                   |
| Friday     | \$100                   |

**Concept 20- Probability and Statistics: Statistics and Data Analysis**

60. The table below shows the amount of gas each car uses on a 200 mile road trip.

| CAR          | GALLONS OF GAS |
|--------------|----------------|
| Cadillac     | 18             |
| Ford Minivan | 15             |
| Honda        | 10             |
| Suburban     | 22             |

Jack states that the Suburban used ABOUT twice as much gas as the Honda. Based on the table, is Jack's statement accurate? Use the data in the table to explain why or why not.

**Concept 21- Probability and Statistics: Probability**

61. The movie schedule below was printed in the entertainment section of the newspaper.

Movie Classics

| Time  | Title          | Length In Minutes | Year Released |
|-------|----------------|-------------------|---------------|
| 6:00  | Harvey         | 104               | 1950          |
| 7:00  | The Front Page | 106               | 1974          |
| 7:00  | Winchester     | 92                | 1973          |
| 8:00  | Super Sleuth   | 75                | 1937          |
| 9:00  | A Star Is Born | 111               | 1937          |
| 11:30 | Gigi           | 116               | 1958          |
| 12:00 | Paper Moon     | 103               | 1973          |

If one of these movies is picked at random, what is the probability that it was made before 1970?

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

**Concept 22- Patterns**

62. These numbers follow a pattern:

64, 56, 48, 40, \_\_\_\_\_

What number should be next in the pattern?

Explain why you think that is the next number in the pattern.

63. What is next in the pattern? Write a sentence to explain your answer.

14, 24, 32, 38, \_\_\_\_\_

- a. 49      b. 48      c. 42      d. 36

64. These numbers follow a pattern:

198, 99, 90, 45, 36, \_\_\_\_\_

What number should be next in the pattern?

Explain why you think that is the next number in the pattern.

### **Concept 23- Algebra and Functions: Algebraic Concepts**

65. What is the value of  $x$  in this equation?

$$24 + x = 78$$

66. What is the value of  $x$  in this equation?

$$58 - x = 27$$

67. What is the value of  $\boxed{y}$  in this equation?

$$23 + \boxed{y} = 42$$

- a. 24      b. 20      c. 19      d. 17

### **Concept 24- Discrete Mathematics: Classification and Logical Reasoning**

68. Clara, Stephen, Julianne, and Jeff raced from school to the park. Clara arrived after Julianne. Stephen got there after Jeff but before Julianne. Who got to the park first?

- a. Clara      b. Stephen      c. Julianne      d. Jeff

69. Christy, Amy, Robby, and Jenna collected baseball cards.

- Amy collected more than Christy and Robby.
  - Jenna collected the FEWEST cards.
- Who collected the most cards?

- a. Christy    b. Robby    c. Amy    d. Jenna

**Concept 25 A- Integrated Understanding: Mathematical Applications**

**70. Fruit Punch for a Party**

A recipe for fruit punch calls for the following ingredients:

|              |         |
|--------------|---------|
| Orange juice | 4 cups  |
| Lemon juice  | 1/2 cup |
| Club soda    | 3 cups  |
| Serves 6     |         |

The chart below shows the ingredients you have in your kitchen. It also shows how you can purchase these ingredients, and their cost.

| What you have |              | How it's sold and what it costs |                 |
|---------------|--------------|---------------------------------|-----------------|
| Orange juice  | 1/2 gallon   | Orange juice                    | \$3.95/gallon   |
| Lemon juice   | 1 1/2 quarts | Lemon juice                     | \$1.25/pint     |
| Club Soda     | 1 gallon     | Club Soda                       | \$1.00/2 quarts |

You know that there are:

- 2 cups in 1 pint
- 2 pints in 1 quart
- 4 quarts in one gallon

In order to make enough fruit punch for 60 people, how much of each ingredient will you need to buy and how much will these ingredients cost? Complete a table that matches the table below.

| Ingredient   | How much do you need to buy? | What will this cost? |
|--------------|------------------------------|----------------------|
| Orange juice |                              |                      |
| Lemon juice  |                              |                      |
| Club soda    |                              |                      |

Total Cost: \_\_\_\_\_



**71. The Bowling Alley**

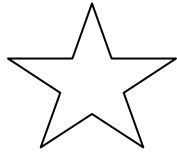
Ginny and her 5 friends are going to Circle Lanes Bowling Alley. They have \$40 to spend. They must spend more than \$35, but no more than \$40. Show one way they can spend their money. Determine what things they will do and what they will eat. Explain your mathematical thinking.

| Circle Lanes |        |
|--------------|--------|
| 1 game       | \$2.00 |
| Video Game   | \$.50  |
| Pizza        | \$1.25 |
| Drink        | \$.75  |
| Candy        | \$.80  |

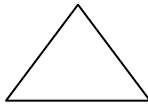
**Concept 25 B- Integrated Understanding: Spatial Mathematical Applications**

**72. Bulletin Board Border**

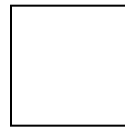
Ashley's job is to make a border for a bulletin board. She will use the following polygons:



(8 of these)



(4 of these)



(4 of these)

She needs to make the border in a pattern using all 3 polygons and all of the amounts listed above. Use the framework on the answer key to create a pattern. Each box should have one polygon. Explain the pattern.

**Concept 25 C- Integrated Understanding: Statistical Mathematical Applications**

**73. The Jewelry Store**

A jewelry designer makes bracelets, necklaces, pins and earrings. The chart below show the number of items made, the cost of materials and the selling price for each type of jewelry.

| Type of jewelry  | Number made | Cost of material | Selling price |
|------------------|-------------|------------------|---------------|
| Bracelets        | 25          | \$4              | \$8           |
| Necklaces        | 15          | \$2.50           | \$6           |
| Pins             | 10          | \$5              | \$9           |
| Earrings (pairs) | 30          | \$1.50           | \$4           |

One day last week the designer made a profit (the difference between the selling price and the cost of the materials) of ABOUT \$200.

Show how many of each type of jewelry could have been sold that day. Show or explain how you arrived at your solution and how you calculated the profit.

**74. A Day at the Science Center**

The brochure for the City Science Center describes the following activities at the museum:

Demonstrations:

Gravity on the Moon - 15 minutes at 10:00, 11:30 and 1:00

Physics of Light - 20 minutes at 10:30, 12:30 and 1:30

Lectures:

Famous Scientists - 30 minutes at 11:00 and 2:00

The DNA mystery - 15 minutes at 9:30 and 11:00

Movies:

Volcanoes - 45 minutes at 9:15 and 2:15

Whales and Dolphins - 25 minutes at noon and 1:30

Exhibits:

Space Travel

Dinosaurs

Energy

Use the information above, including taking a 45 minutes lunch break, to plan a day at the science center that includes at least 2 hours in the exhibits and at least one demonstration, on lecture and one movie. Complete a schedule that shows your plan.