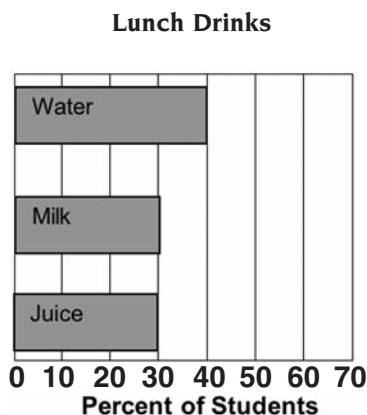


NIE

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SIXTH GRADE MATH

Use the graph below to answer question 1.



1. Students can choose water, milk, or juice for lunch. The percentages for drinks chosen today are shown on the graph. There are 150 students who eat lunch each day. What percent of students chose water?

- A. 10%
- B. 30%
- C. 70%
- D. 40%

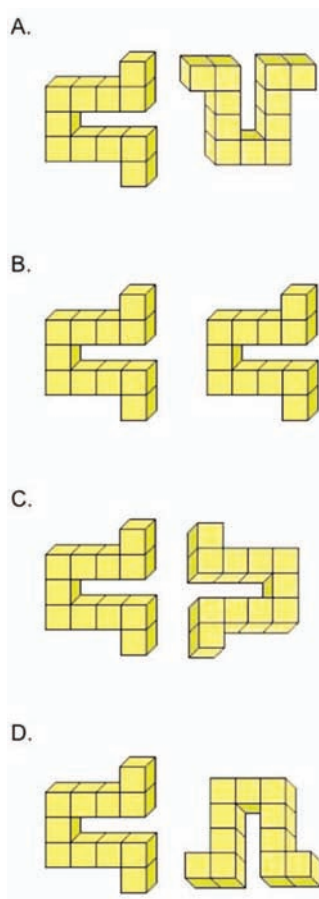
2. Tran buys the *Pioneer Press* newspaper each day at the news stand. If the daily paper (Monday through Saturday) costs 25¢ and the Sunday paper costs \$1.00, how much does he spend per week on the newspaper? (no calculator)

- A. \$2.25 per week
- B. \$1.50 per week
- C. \$2.50 per week
- D. \$1.25 per week

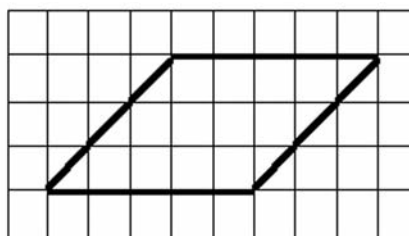
3. Mai can earn \$9.30 if she sells 3 ornaments. How much does each ornament cost? (no calculator)

- A. \$27.90
- B. \$12.30
- C. \$9.33
- D. \$3.10

4. Which transformation shows a reflection (flip)?



Use the shape below to answer question 5.



5. What is the area of the parallelogram shown on the grid?

- A. 24 square units
- B. 20 square units
- C. 32 square units
- D. 15 square units

SIXTH GRADE MATH

6. Order the numbers from least to greatest.

$1/5$, 0.5, 0.05, 0.23, $1/3$

- A. $1/3$, $1/5$, 0.23, 0.05, 0.5
- B. 0.05, $1/5$, 0.23, $1/3$, 0.5
- C. 0.23, 0.5, 0.05, $1/5$, $1/3$
- D. $1/5$, $1/3$, 0.23, 0.05, 0.5

7. If 62 people are invited to a picnic and each table seats 8 people, how many tables are needed so that everyone has a seat?

(no calculator)

- A. 7.75 tables
- B. 8 tables
- C. 7 tables
- D. 8.2 tables

8. The dessert recipe called for $1 \frac{1}{3}$ cups of white sugar and $\frac{3}{4}$ cup of brown sugar. The frosting will need $2 \frac{1}{2}$ cups of powdered sugar. What is the total amount of sugar needed to make this dessert?

Put the answer in the grid below. On the gridded response, it is necessary to change a mixed number into an improper fraction to record the answer.

\$	/	/	/	/	%
-
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

9. If gas costs \$2.89 a gallon and Kong needs to buy 14 gallons, what amount is closest to the total amount Kong will pay to fill the tank?

(no calculator)

- A. \$3.00
- B. \$28.00
- C. \$42.00
- D. \$17.00

10. What is the prime factorization of 60?

- A. $2 \times 5 \times 6$
- B. $2 \times 2 \times 2 \times 10$
- C. $2 \times 2 \times 15$
- D. $2 \times 2 \times 3 \times 5$

11. Natalie rolled a 6-sided number cube (die) 24 times. According to the data in the table, what is the probability of rolling a number 2?

Number on Side of Cube	Frequency of Number Rolled
1	4
2	7
3	2
4	5
5	3
6	3

- A. $2/7$
- B. $7/24$
- C. $3/6$
- D. $2/3$

SIXTH GRADE MATH

12. The normal precipitation in Lagille in January is 4.8 inches. By January 15th only 1.3 inches of rain had fallen. After it rains 2.2 inches on January 23rd, how much more rain is needed to reach the average?

(no calculator)

- A. 1.3 inches
- B. 2.2 inches
- C. 3.5 inches
- D. 4.8 inches

13. In the Banneker Elementary School Band there are:

Instruments	Number of Students
Clarinets	7
Flutes	8
Saxophones	4
Trumpets	3
Trombones	3
Drummers	2

Part A. Make a bar graph to display the number of instruments in the table.

Part B. The trumpet players practice a half hour 5 days a week. How many weeks will it take for the whole trumpet section to reach 30 hours of practice?

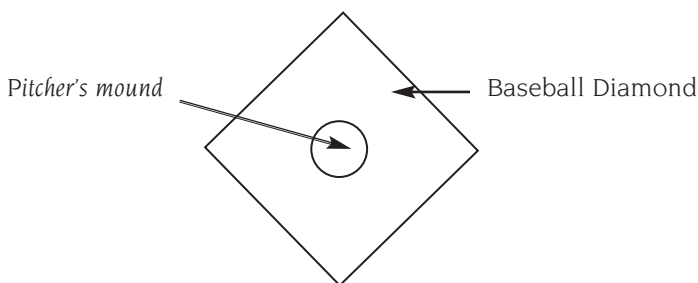
(no calculator)

Show and explain your work.

14. Which of the following is the least common multiple of 15, 12, and 10?

- A. 60
- B. 50
- C. 30
- D. 1,800

Use the shapes below to answer question 15.



15. The diameter of the pitching mound is 18 feet. Which is closest to the circumference of the pitching mound? (Use 3.14 for π .)

(no calculator)

- A. 56.52 feet
- B. 21.14 feet
- C. 6.00 feet
- D. 5.73 feet

16. A piece of wood measures 125 centimeters long. It is cut into 12 pieces of equal length. What is the length of each piece of wood to the nearest tenth of a centimeter?

(no calculator)

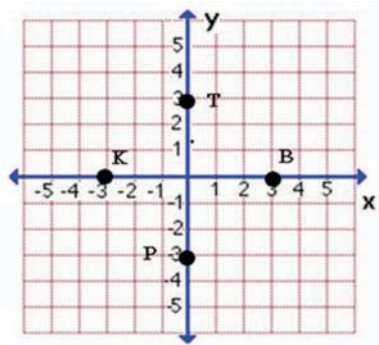
- A. 113.0 cm
- B. 104.0 cm
- C. 10.4 cm
- D. 137.0 cm

SIXTH GRADE MATH

17. Juan's height was $60 \frac{1}{8}$ inches in September. In June his height was $61 \frac{1}{4}$ inches. How much did Juan grow during this time?

- A. $1 \frac{1}{8}$ inches
- B. $1 \frac{1}{4}$ inches
- C. $121 \frac{2}{12}$ inches
- D. $1 \frac{1}{2}$ inches

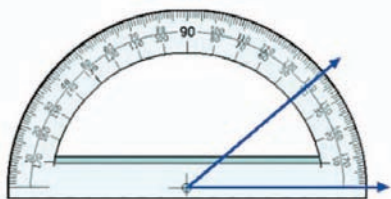
Use the coordinate grid below to answer question 18.



18. In the grid above, which ordered pair represents $(-3, 0)$?

- A. Point T
- B. Point B
- C. Point P
- D. Point K

Use the diagram below to answer question 19.



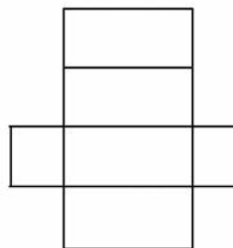
19. If the angle shown measures 40° , what is the measure of the supplementary angle?

- A. 60°
- B. 140°
- C. 180°
- D. 50°

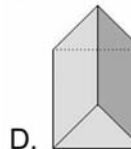
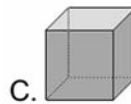
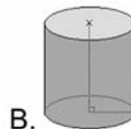
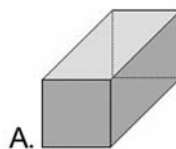
20. Courtney earns \$5 an hour and works 4 hours per week. Amy earns \$6 an hour and works 3 hours per week. Which expression would be used to calculate how much more money Courtney will make in a week than Amy?

- A. $6(3) - 5(4)$
- B. $4(5) - 4(3)$
- C. $(5+4) - (6+3)$
- D. $(5 \times 4) - (6 \times 3)$

Use the net below to answer question 21.



21. Which three-dimensional figure can be created from the net shown above?

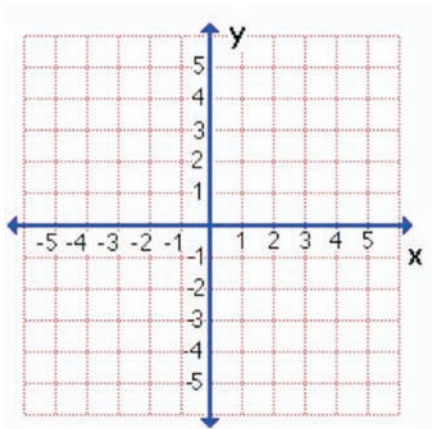


SIXTH GRADE MATH

22. What is the value of $\frac{3-12\div 6+5\times 4}{7}$?
- A. 1
 - B. 7
 - C. 3
 - D. -19

25. James has 7 shirts in his closet including 2 red shirts. If he reaches for a shirt without looking, what is the probability he will pick a red shirt?
- A. 7 out of 2
 - B. 2 out of 7
 - C. 5 out of 7
 - D. 2 out of 5

Use the coordinate grid below to answer question 23.



23. Which set of ordered pairs fall on a diagonal line?
- A. (1, 4) and (1, -3)
 - B. (-3, 2) and (5, 2)
 - C. (-1, 3) and (2, -3)
 - D. (-4, -2) and (1, -2)

24. Find the median and mean (average) of the following set of numbers:

84, 123, 56, 92, 90

Show and explain your work.

Use the table below to answer question 26

Rented Movies	Number
Adventure	11
Comedy	14
Drama	17

26. Use the table above to determine the probability that the movie rented was a comedy.
- A. 13 out of 18
 - B. 13 out of 11
 - C. 11 out of 18
 - D. 1 out of 3

27. One container holds 3.8 liters of liquid. Another container holds 500 milliliters of the same liquid. When the two liquids are combined in a third container, how many milliliters will this container need to hold?

- A. 5,308.0 milliliters
- B. 503.8 milliliters
- C. 5,380.0 milliliters
- D. 4,300.0 milliliters

28. The wrestling coach wants to cut 15 jump ropes, each 6 feet long. How many yards of rope should he buy?

- A. 21 yards
- B. 9 yards
- C. 30 yards
- D. 90 yards



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29. Deshayla walked a $\frac{1}{2}$ mile from school to the park. Then she walked $\frac{1}{4}$ mile to the store to get milk and orange juice. These items cost $2\frac{1}{2}$ dollars. She then walked home, another $\frac{3}{8}$ of a mile. How far did Deshayla walk in all?

- A. $3\frac{5}{8}$ miles
- B. $1\frac{1}{8}$ miles
- C. $2\frac{6}{16}$ miles
- D. $3\frac{3}{8}$ miles

30. The overall dimensions of a regulation soccer field are 100 yards long and 60 yards wide. What is the perimeter of a regulation soccer field?
(no calculator)

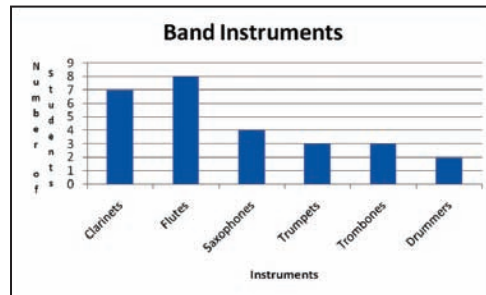
- A. 160 yards
- B. 260 yards
- C. 320 yards
- D. 6,000 yards

SIXTH GRADE MATH ANSWERS

1. D (Computation and operation: find, represent and use percentages)
2. C (Computation and operation: use addition, subtraction, multiplication, and division to solve multi-step problems)
3. D (Computation and operation: multiply and divide without a calculator)
4. C (Spatial sense: use visual representations of transformations) Reflection is a “mirror” image
5. D (Measurement: find area) Either count the squares inside or find the height (3) and multiply by the base (see formula sheet)
6. B (Number sense: order and compare rational numbers)
7. B (Division, but also using the remainder in the context of the problem) Need another table for the “remainder” guests.
8. D (Computation and operation: add, subtract, multiply, and divide fractions and mixed numbers)
Note: On the gridded response, it is necessary to change a mixed number into an improper fraction to record the answer $4\frac{7}{12}$ needs to be changed to $\frac{55}{12}$
9. C (Number sense: rounding and estimating)
10. D (Computation and operation: determine prime factorization of positive integers)
11. B (Probability: use data in graphs and tables to estimate experimental probabilities) Total of 24 rolls and the frequency of the number 2 is 7
12. A (Computation and operation: use addition, subtraction, multiplication, and division to solve problems)

13. {Data: represent and analyze data in tables and graphs) Constructed response sample answer.

Part A



Part B (Possible strategy) There are 3 trumpet players and each practices 30 minutes a day, 5 days a week. $3(30 \times 5) = 450$ minutes. 450 minutes divided by 60 minutes in an hour = 7.5 hours per week. 450 minutes divided by 7.5 hours per week. Then 30 hours divided by 7.5 hours = 4 weeks.

14. A (Computation and operation: determine the least common multiple of a set of whole numbers) Least common multiple (not just a common multiple)
15. A (Geometry: find the area and circumference of a circle) Finding the circumference of a circle based on the diameter (see formula sheet)
16. C (Computation and operation: multiply and divide whole numbers and decimals)
17. A (Computation and operation: add, subtract, multiply, and divide fractions and mixed numbers)
18. D (Patterns: writing ordered pairs of points, plotting ordered pairs and locating points) Reading ordered pairs on a coordinate grid:
K (-3, 0); P (0, -3); B (3, 0); T (0, 3)
19. B (Geometry: measure and identify angles) The sum of two supplementary angles is 180° .
20. D (Algebra: apply the correct order of operations to simplify and evaluate numeric expressions) Courtney's income is expressed as 5 times 4; Amy's income is 6 times 3; then find the difference (subtract)



SIXTH GRADE MATH ANSWERS

21. A (Spatial sense: identify models of three-dimensional geometric shapes from two-dimensional representation) A net is a 2-D “layout” of a 3-D figure.
22. C (Computation and operation: apply the correct order of operations to simplify and evaluate numeric expressions) Divide ($12 \div 6$) and multiply (5×4) first; then subtract and add (left to right); finally divide 21 by 7.
23. C (Patterns: writing ordered pairs of points, plotting ordered pairs and locating points) *A* appears on a vertical line; *B* and *D* appear on a horizontal line; *C* appears on a diagonal line.
24. (Data: understand the difference and appropriate use of mean, median, and mode) Constructed response sample answer:
Median: First rearrange the numbers in ascending order: 56 84 90 92 123
The median is the middle number that divides the data set into two groups: 90
The mean (average) is found by adding all of the numbers in the data set (445) and then dividing the sum by the number of numbers in the set (5); $445 \div 5 = 89$
25. B (Probability: use representations of possible outcomes to calculate probabilities)
26. D (Probability: use representations of possible outcomes to calculate probabilities) Total number of rented movies is 42 and comedy movies were rented 14 times; the relationship 14 out of 42 was simplified to 1 out of 3.
27. D (Measurement: convert within the metric system) 3.8 liters is equivalent to 3,800 milliliters
28. C (Measurement: convert within the customary system) 15 jump ropes times 6 feet is 90 feet; convert feet to yards
29. B (express measures of time and distance as fractions, mixed numbers and decimals) Convert the fractions to common denominators; disregard the irrelevant information (2 1/2 dollars)
30. C (Measurement: find the area and perimeter of rectangles, squares, triangles, and parallelograms) Either double the length and double the width and find the sum or use the formula (see formula sheet).