

OK OAS Middle School Math Samples

- 1 In golf, the winning score is the lowest score. Which of the following golfers has the winning score?

Golfer	Score
Maria	-5
Carlos	-2
Davila	3
Brad	-7

- A. Maria B. Carlos C. Davila D. Brad

- 2 Write 0.72 as a percent.

- A. 0.072% B. 0.72%
C. 72% D. 720%

- 3 What is the greatest common factor of 12 and 36?

- A. 2 B. 4 C. 6 D. 12

- 4 A person lost in an office building travels up 3 floors in an elevator, then down 1 floor, then up 5 more floors, then down another 4 floors. What number sentence would represent this situation?

- A. $+3 - 1 - 5 - 4 = \square$
B. $+3 - 1 + 5 - 1 = \square$
C. $+3 - 1 + 5 - 4 = \square$
D. $+3 + 1 + 5 + 4 = \square$

- 5 A certain stock has a price of \$150 per share. If the earnings per share is \$10, what is the price to earnings ratio?

- A. 15 : 10 B. 15 : 1 C. 2 : 5 D. 1 : 15

- 6 Estimate the quotient: $6,122 \div 289$

- A. 20 B. 30 C. 300 D. 400

- 7 In Super Bowl XLVI the New York Giants faced the New England Patriots. At one point 1,370,000 tweets had been posted. According to Twitter, that was $\frac{1}{10}$ the number of total tweets posted during the game.

$$1,370,000 \div \frac{1}{10} = \square$$

How many total tweets?

- A. $\frac{137}{10}$ B. 137,000
C. 1370 D. 13,700,000

- 8 Esmeralda replaced a 0.0725 inch diameter needle on her sewing machine with a stronger 0.0843 inch diameter needle. How much larger in diameter is the second needle?

- A. 0.00118 inches B. 0.0112 inches
C. 0.0118 inches D. none of these

- 9 Matt earned \$110 last week. He saved $\frac{1}{5}$ of his earnings to pay for a bike. Approximately how much did he save last week?

- A. \$40 B. \$30 C. \$25 D. \$20

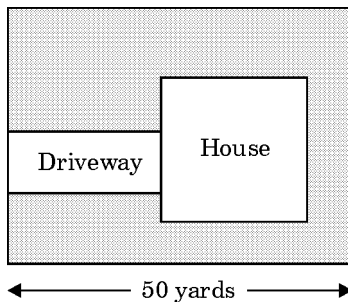
10 Jorge eats 3 servings of fruit per day. On Wednesday he's eaten $1\frac{3}{4}$ servings when he runs out of fruit. He goes to the store to get more, but when he gets back he forgets how many servings he already ate and eats another 2 servings. If he eats his usual amount of fruit every other day that week, which number sentence could be used to determine how many servings of fruit Jorge ate that week?

- A. $s = 1\frac{3}{4} + 2 + 3 + 6$ B. $s = 1\frac{3}{4} + (2 \times 3)$
 C. $s = 1\frac{3}{4} + 2 + (3 \times 6)$ D. $s = 1\frac{3}{4} + 2 + 3$

11 Which equation is equivalent to $x + 25 = 9$?

- A. $x = 25 + 9$ B. $x = 25 - 9$
 C. $x = 9 - 25$ D. $x = 25$

12 You are a landscape architect. A scale drawing of the lot for a customer's house is shown in the diagram. The lot is 50×42 yd, the house is 17×25 yd, and the driveway is 5×15 yd. If a bag of fertilizer is advertised to treat 200 sq yd of lawn, how many bags are needed to treat the lawn (the shaded area)?

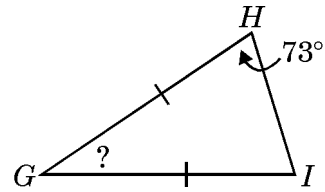


- A. 8 bags B. 10 bags
 C. 11 bags D. 12 bags

13 If $m\angle D + m\angle E = 180^\circ$, then $\angle D$ and $\angle E$ are _____.

- A. supplementary B. isosceles
 C. acute D. obtuse

14 Triangle GHI is an isosceles triangle.



If the measure of $\angle H$ is 73° , what is the measure of $\angle G$?

- A. 73° B. 17° C. 34° D. 104°

15 Which item below would have a mass of less than 5 grams?

- A. a binder B. a television
 C. a scissors D. a raisin

16 Which is the best estimate of the weight of a puppy dog?

- A. 3 ounces B. 3 pounds
 C. 3 grams D. 3 tons

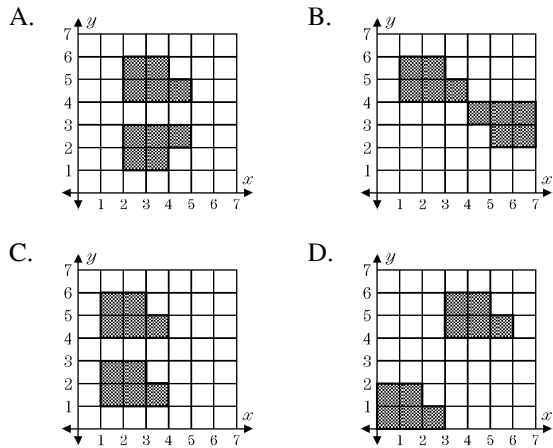
17 Marty bought a quart of milk from the store. How many cups of milk would that provide for dinner?

- A. 2 B. 4 C. 6 D. 8

18 Jacob is 5 feet 3 inches tall. Blake is 4 feet tall. How much taller is Jacob than Blake?

- A. 9 ft 3 in. B. 1 ft 3 in.
 C. 1 ft D. 3 in.

19 Which of the following shows an example of a rotation?



20 Which of these has only four lines of symmetry?

- A. isosceles trapezoid
- B. rectangle
- C. regular pentagon
- D. square

21 The Friday attendance at a local theater is shown for the last 7 weeks.

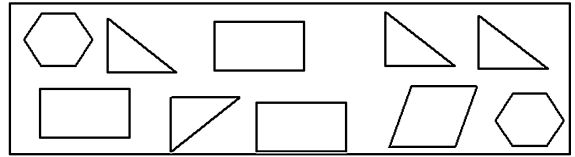
THEATER ATTENDANCE

Week	Attendance
1	101
2	79
3	170
4	150
5	92
6	85
7	79

What is the mean Friday attendance for the 7-week period?

- A. 108
- B. 162
- C. 232
- D. 756

22 Jamie has a box with pattern blocks. The box has the shapes shown below.



Which block is Jamie less likely to choose?

- A.
- B.
- C.
- D.

23 Which of the following inequalities is *not* true?

- A. $-8.38 > -8.83$
- B. $3.32 > 2.43$
- C. $-6.01 > -1.06$
- D. $-0.034 < 0.0058$

24 Put this list in order from smallest to largest:

- $0.246\overline{...}$
- $0.234\overline{...}$
- $0.\overline{24}$
- $0.\overline{23}$

25 Which statement is correct?

- A. $4^3 > 3^4$
- B. $(-\frac{1}{4})^3 > (-\frac{1}{3})^4$
- C. $(-4)^3 > (-3)^4$
- D. $(\frac{1}{4})^3 > (\frac{1}{3})^4$

- 26 Greatland Power Company (GPC) charges customers 22.358 cents per kilowatt-hour of electricity used each month. In addition to the cost of electricity, GPC charges each customer \$18.75 per month for service.
- If a customer uses 1057 kilowatt-hours of electricity (kWh) during a month, determine the total charges from GPC.
 - If GPC decreased the rate per kilowatt-hour by 10% and increased the monthly service charge by \$2.50, what would be the new total billing for 1057 kilowatt-hours?
 - If a customer receives a bill for \$237.86, how many kilowatt-hours were used during the month? Round your answer to nearest whole kilowatt-hour.
 - At an appliance store, a new energy-efficient dishwasher has a label that reads:

ENERGY CONSUMPTION
190 kWh per year

Mrs. Borman currently has a dishwasher that consumes 420 kWh per year. She decides to trade it in for the energy-efficient dishwasher. On average, how much will she save in electricity costs *per month*?

- 27 The financial activities of a small business are shown.
- \$25 income
 - \$50 expense
 - \$75 expense
 - \$30 income

Which of these indicates the greatest change?

- A. A B. B C. C D. D

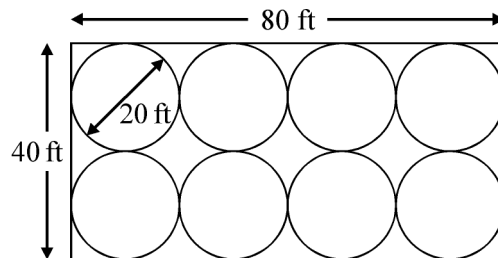
- 28 Gary has been saving money for a guitar amplifier that costs \$125. Currently he has put aside \$53.00. If the amplifier goes on sale for 20% off, how much more money does Gary need?

- A. \$47.00 B. \$57.00
C. \$72.00 D. none of these

- 29 A rectangular prism has dimensions of 21 cm, 28.7 cm, and 39.5 cm. What is its approximate volume?

- A. 2,400 cm³ B. 12,000 cm³
C. 16,000 cm³ D. 24,000 cm³

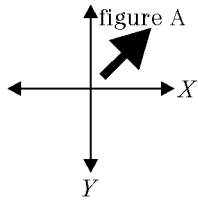
- 30 A rectangular field is covered by circular sprinklers as shown in the diagram. What percentage of the field is *not* being watered by the sprinklers?



- A. 79% B. 71% C. 29% D. 21%

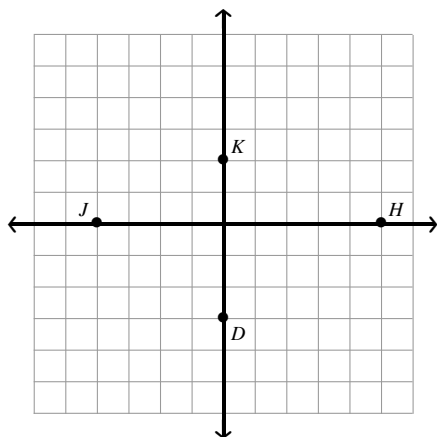
- 31 A scale model of the space shuttle is 24 inches in length and 9 inches in height. If the actual space shuttle is 54 feet in height, what is its length?

- 32 If you flip figure A over line Y, what would it look like?



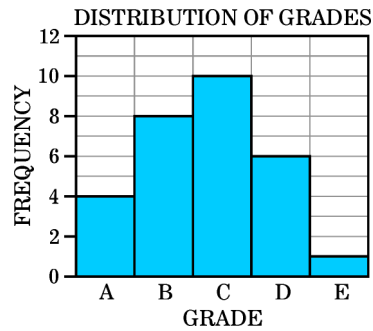
- A. B. C. D.

- 33 The reflection of point K over the x-axis has which coordinates?



- A. $(-2, 0)$ B. $(0, -2)$
C. $(0, 2)$ D. $(2, 2)$

- 34 The histogram shows the grade distribution for a science test given to Mr. Cassat's class. How many students are in the class?



- 35 The probability of choosing a fortune cookie with a positive message is 3 out of 4. Arnold has a box containing 648 fortune cookies. About how many contain *negative* messages?

- A. 100 B. 110 C. 138 D. 162

- 36 Use the properties of exponents to simplify the expression.

$$\frac{5.6 \times 10^7}{4.0 \times 10^2}$$

- A. 1.4×10^0 B. $1.4 \times 10^{2.2}$
C. 1.4×10^4 D. 1.4×10^5

- 37 Multiply 50,000,000,000,000,000 by 0.000000432, by converting to and then writing your answer in scientific notation.

- A. 2.16×10^{11} B. 2.16×10^{12}
C. 2.16×10^{13} D. 2.16×10^{14}

- 38 The following steps prove that the product of two rational numbers is rational. These steps are not necessarily in correct order.

1) $\left(\frac{a}{b}\right)\left(\frac{c}{d}\right) = P$

2) let $r = \frac{a}{b}$ and $s = \frac{c}{d}$, where $a, b, c,$ and d are integers; b and $d \neq 0$

3) $\frac{ac}{bd} = P$

4) $\frac{e}{f} = P$

5) let $ac = e$ and $bd = f$, where e and f are integers

6) $rs = \frac{e}{f}$

7) $rs = P$

What is the correct order of these steps?

- A. 1, 2, 3, 4, 5, 7, 6 B. 2, 1, 3, 5, 4, 6, 7
C. 7, 1, 2, 3, 4, 6, 5 D. 7, 2, 1, 3, 5, 4, 6

- 39 What is the square root of 0.36?

- A. 0.06 B. 0.6 C. 0.8 D. 8

- 40 The rental rate for a precision sewing machine is shown in the table.

Rental Rate	
Time (hrs)	Charge (\$)
4	25.00
8	35.00
12	45.00
16	55.00

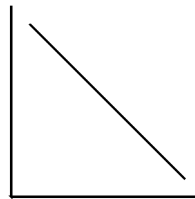
Which of the following is the relation of R , rental charge, and t , time rented?

- A. $R = 5t + 5$ B. $R = \frac{3}{2}t + 13$
C. $R = \frac{7}{2}t + 11$ D. $R = \frac{5}{2}t + 15$

- 41 Use the table of values to write a rule that describes the relationship between the variables x and y . Your rule can be explained in words or written as an algebraic expression.

x	3	6	9	12	15
y	10	19	28	37	46

- 42 Think of two variables that could be represented by a straight-line graph like the one shown. Add labels for the x and y axes on the graph. Make up a question about your variables that could be answered by the graph.



- 43 How does the graph of the line $y = -\frac{3}{4}x - 1$ differ from the graph of the line $y = -4x - 1$?

- A. $y = -4x - 1$ is steeper than $y = -\frac{3}{4}x - 1$
B. $y = -\frac{3}{4}x - 1$ is steeper than $y = -4x - 1$
C. $y = -\frac{3}{4}x - 1$ and $y = -4x - 1$ do not differ
D. The x -intercept of $y = -4x - 1$ is $3\frac{1}{4}$ units to the right of the x -intercept of $y = -\frac{3}{4}x - 1$

- 44 Look at the equation.

$$5(3 - x) = 4(x - 3)$$

How many solutions are possible for the equation?

- A. no solution B. one
C. two D. infinite

45 Henry and Jerome are having a race to see who is the fastest. They have previously had their speeds calculated in gym class and find out that Henry travels at 2.5 meters per second and Jerome travels at 2 meters per second. If Henry gives Jerome a 15 meter head start, how long will it take for Henry to catch up to Jerome? Use a table, graph, or equation to solve.

46 If a 12 ounce can of soda contains at least 120 calories, which inequality can be used to represent the number of calories in 3 cans of soda (S)?

- A. $3S \geq 120$ B. $3S \geq 360$
 C. $3S \leq 120$ D. $3S \leq 360$

47 Debra has grades of 77, 95 and 81, but she also has a project to turn in. All 4 grades count equally. Which inequality could be used to determine the lowest grade x she can make on the project to have an average of at least 82?

- A. $\frac{(77 + 95 + 81 - x)}{4} \neq 82$
 B. $77 + 95 + 81 + x \leq 4(82)$
 C. $\frac{(77 + 95 + 81)}{3} + x \geq 82$
 D. $77 + 95 + 81 + x \geq 4(82)$

48 Consider this table and the equation following it:

	VALUE	AMOUNT	\$
Type I	\$5.90	x	$5.9x$
Type II	\$8.40	20	8.4×20
Mix	\$7.50	$x + 20$	$7.5(x + 20)$

$$5.9x + 8.4(20) = 7.5(x + 20)$$

Make up a word problem or situation for which the above information could be used.

49 Calculate the distance between the points $M(-1, -8)$ and $N(4, -1)$.

- A. $\sqrt{58}$ B. $\sqrt{74}$ C. $\sqrt{106}$ D. 12

50 According to employees at the Regional Butterfly Conservatory, the most commonly asked question is, "How many butterflies will land on me while I'm visiting the conservatory?"

In order to give visitors a more accurate answer, 50 of the 2000 butterflies are tagged with identifiers and an employee is sent into the conservatory. Three different tagged butterflies land on the employee. Explain what employees can now tell visitors when they ask that same question, based on the findings of their experiment.

1.
Answer: D
Objective: 6.N.1.1
Points: 1
2.
Answer: C
Objective: 6.N.1.4
Points: 1
3.
Answer: D
Objective: 6.N.1.6
Points: 1
4.
Answer: C
Objective: 6.N.2.3
Points: 1
5.
Answer: B
Objective: 6.N.3.1
Points: 1
6.
Answer: A
Objective: 6.N.4.1
Points: 1
7.
Answer: D
Objective: 6.N.4.4
Points: 1
8.
Answer: C
Objective: 6.N.4.4
Points: 1
9.
Answer: D
Objective: 6.N.4.4
Points: 1
10.
Answer: C
Objective: 6.A.3.1
Points: 1
11.
Answer: C
Objective: 6.A.3.2
Points: 1

12.
Answer: A
Objective: 6.GM.1.3
Points: 1
13.
Answer: A
Objective: 6.GM.2.1
Points: 1
14.
Answer: C
Objective: 6.GM.2.2
Points: 1
15.
Answer: D
Objective: 6.GM.3.1
Points: 1
16.
Answer: B
Objective: 6.GM.3.1
Points: 1
17.
Answer: B
Objective: 6.GM.3.2
Points: 1
18.
Answer: B
Objective: 6.GM.3.2
Points: 1
19.
Answer: B
Objective: 6.GM.4.1
Points: 1
20.
Answer: D
Objective: 6.GM.4.4
Points: 1
21.
Answer: A
Objective: 6.D.1.1
Points: 1
22.
Answer: C
Objective: 6.D.2.1
Points: 1

23.
Answer: C
Objective: 7.N.1.2
Points: 1
24.
Answer: 4,2,3,1
Objective: 7.N.1.2
Points: 1
25.
Answer: D
Objective: 7.N.2.5
Points: 1
26.
Answer: \$255.07; 980 kWh; \$19.17; \$233.94
Objective: 7.A.3.1
Points: 1
27.
Answer: C
Objective: 7.N.2.6
Points: 1
28.
Answer: A
Objective: 7.A.2.2
Points: 1
29.
Answer: D
Objective: 7.GM.1.2
Points: 1
30.
Answer: D
Objective: 7.GM.2.2
Points: 1
31.
Answer: 144 feet
Objective: 7.GM.4.2
Points: 1
32.
Answer: C
Objective: 7.GM.4.3
Points: 1
33.
Answer: B
Objective: 7.GM.4.3
Points: 1
34.
Answer: 29
Objective: 7.D.1.2
Points: 1
35.
Answer: D
Objective: 7.D.2.3
Points: 1
36.
Answer: D
Objective: PA.N.1.3
Points: 1
37.
Answer: C
Objective: PA.N.1.3
Points: 1
38.
Answer: D
Objective: PA.N.1.4
Points: 1
39.
Answer: B
Objective: PA.N.1.5
Points: 1
40.
Answer: D
Objective: PA.A.2.1
Points: 1
41.
Answer: $y = 3x + 1$
Objective: PA.A.2.1
Points: 1
42.
Answer: [graph]
Objective: PA.A.2.2
Points: 1
43.
Answer: A
Objective: PA.A.2.4
Points: 1
44.
Answer: B
Objective: PA.A.4.1
Points: 1
45.
Answer: 30 seconds
Objective: PA.A.4.1
Points: 1
46.
Answer: B
Objective: PA.A.4.2
Points: 1
47.
Answer: D
Objective: PA.A.4.3
Points: 1

48.
Answer: [answers vary]
Objective: PA.A.4.3
Points: 1

49.
Answer: B
Objective: PA.GM.1.2
Points: 1

50.
Answer: [answers vary]
Objective: PA.D.2.1
Points: 1