Keystone National High School Placement Exam   *Math Level I*

1.	2.
Find the seventh term in the following sequence: 2, 6, 18, 54 … a) 162 b) 1458 c) 108 d) 486	Write a numerical expression for the verbal phrase. "sixteen minus the quotient of twelve and six" a) $16 - 6 \div 12$ b) $12 \div 6 - 16$ c) $16 \div 12 - 6$ d) $16 - 12 \div 6$
3. Evaluate the expression: $6a + 2b - 6c + 4$, if a=3, b=5 and c= -1. a) 38 b) 26 c) 34 d) 22	4. Rewrite the expression $(6 \bullet c) \bullet 12$ using the Associative Property.

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5.

Simplify the following using proper order of operations:

$$5(16+3)-6\times2+1$$

a) 179
b) 84
c) 155
d) 267

6.

Put the following integers in order from *greatest to least*:

-3, 12, 9, -8, 13

7.

Evaluate the following expression:

| -4 | + | 12 | - | -9 |

a) -17
b) 25
c) 1
d) 7

8.

Simplify the following expression:

6(3x) – 2y + 3z + 12(4x) – 9y

a) 66x – 11y + 3z
b) 30x + 11y + 3z
c) 25x – 11y + 3z
d) cannot be simplified

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9.	10.
In which quadrant would the point (9, -10) be located?	Simplify the following: $$3(x + 1) - 4(2x - 5) + 10x$$
a) Quadrant 1 b) Quadrant 2 c) Quadrant 3 d) Quadrant 4	a) 5x – 32 b) 21x + 23 c) 5x + 23 d) 5x – 17
11.	12.
Write and solve the equation to find the value of x. "The difference of a number x and ten is negative four."	Write and solve the equation to find the value of x. "The quotient of negative sixty and a number x is four."
a) x + 10 = -4; x = 5 b) x – 10 = -4; x = 6 c) x – 10 = -4; x = -6 d) x + 10 = -4; x = -5	a) -60 * x = 4; x = 15 b) -60 / x = 4; x = -15 c) -60 * x = 4; x = -15 d) -60 / x = 4; x = 15

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13.	14.
Translate the following sentence into an equation. Then, find its solution. "If six is decreased by four times a number n, the result is twelve."	Find the perimeter of a rectangle with a width of (2x + 3) and a length of 2x.
15. Simplify the following: $$x^4 \bullet x^3 \bullet x$$ a) x^{12} b) x^7 c) x^{13} d) x^8	16. Write the expression using exponents. Then solve using x=2 and y= -5. 2 2 y y y x x a) $2^2x^2y^3$; -2000 b) $2^2x^3y^2$; 2000 c) $2^3x^2y^2$; 800 d) $2^2x^2y^3$; 2000

17.	18.
Find the GCF of the following set of numbers: 260, 80, 50 a) 10 b) 5 c) 2 d) 15	Which of the following numbers is divisible by 3 and 9? a) 231 b) 729 c) 691 d) 654
19.	20.
Write the following using negative exponents: $$\frac{1}{x^5}$$	Write the following number in scientific notation: .00098

21.	22.
Find the product and write it in simplest form.	Find the quotient and write it in simplest form.
$$\frac{5}{9} \times 6\frac{3}{4}$$	$$3\frac{3}{8} \div \frac{1}{4}$$
a) 3 3/4 b) 7 11/36 c) 6 5/12 d) 4 1/12	a) 4 1/2 b) 12 3/8 c) 13 1/2 d) 27/32
23. Simplify: 3/8 – 10/13	**24.** Find the mean, median and mode for the following set of temperatures. Round to the nearest tenth if needed. 102, 100, 87, 76, 58, 91, 43, 100

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25.	26.
A cheetah can run up to 60 miles per hour. How many inches per second is this?	Solve for x. $$\frac{3}{4} = \frac{12}{x - 5}$$
a) 987 inches per second b) 1056 inches per second c) 560 inches per second d) 88 inches per second	a) x = 12 b) x = 21 c) x = 11 d) x = 31
27. In an aquarium containing 230 fish, 20% are angelfish. How many of the fish are angelfish? a) 20 b) 1150 c) 36 d) 46	**28.** A t-shirt that normally costs $21.95 is on sale at a 15% discount. What is the sale price? a) $18.66 b) $3.29 c) $25.24 d) $4.68

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29.	30.
Suppose you roll two die. Find the probability of rolling a seven.	Solve for m. $$2(3 + m) - 1 = 3m + 11$$
31. Solve the inequality. $$7 < x + 3$$	32. Solve the inequality. Final answer should be in decimal form and rounded to the tenths. $$-2/3 \; x + 5 < -2$$
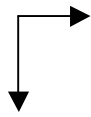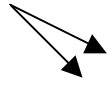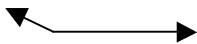
33.	34.
Name the supplementary angle to 43°	If two angles of a triangle are 30° and 102°, what is the third angle?
a) 47° b) 17° c) 137° d) 107°	a) 48° b) 62° c) 70° d) 41°
35.	36.
Find the LCM of the following numbers 8, 20, 36	Write the following in decimal form: "four hundred and twenty-six thousandths"

37.	38.
Write the following in words: 5,620,003.0263	Change 455 cm to meters a) 0.455m b) 4.55m c) 45.5m d) 4,550m

39.
 	
Write the following in standard notation:
 	
      6.239×10^{-4}
 	
a) 0.0006239
b) 62,390
c) 0.00006239
d) 6,239
	40.
	
	Simplify the following. Write the final answer in Scientific Notation.
	
	      $(3.2 \times 10^5)(5.7 \times 10^{-2})$
	
	a) 8.9×10^3
	b) 1.824×10^4
	c) 89×10^{-10}
	d) 18.24×10^3

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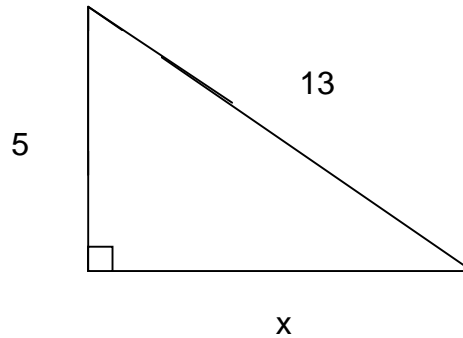| 41.	42.
Find the prime factorization of 837.	What is the square root of 27 to the nearest tenth? a) 5.2 b) 5.1 c) 9 d) 3
43. Simplify the following: $$\frac{\sqrt{16}}{6\sqrt{49}}$$	**44.** Which choice would be reasonable for an angle that measures 75 degrees? a b c d

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45. Three angles of a triangle are 2x, 5x and 8x + 15. Find the measure, in degrees, of each angle.	46. Find the length of x. (right triangle with legs 5 and x, hypotenuse 13)
47. Solve for y. $4(y+3) + 2y = (9y+6) - 8$	48. Solve. Write the answer in simplest form. $\dfrac{3}{4} \times \dfrac{2}{5}\left(\dfrac{1}{3} + \dfrac{4}{7}\right) - \dfrac{1}{7}$

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49.	50.
Angle 1 and angle 2 are supplementary angles. Find the degree measurement of each angle if angle 1 is (5x + 1) and angle 2 is (5x + 9).	Find the area of a triangle with a base of 10m and a height of 12m. **Area: ½(bxh)**
a) 86 degrees, 4 degrees b) 41 degrees, 49 degrees c) 86 degrees, 94 degrees d) 104 degrees, 16 degrees	a) 12 m^2 b) 120 m^2 c) 60 m^2 d) 240 m^2
51.	52.

The area of a circle is 120 in^2. Find the circumference. Round to the tenths if necessary. (Use 3.14 for π).
  Area: πr^2
  Circumference: dπ
	Find the volume of a cylinder if the diameter is 30 ft and the height is 100 ft. (Use 3.14 for π).
	  Volume: πr^{2}h

a) 6.2 in b) 12.4 in c) 39.0 in d) 240 in	a) 70,000.9 ft^2 b) 32,000.1 ft^3 c) 71,340.2 ft^3 d) 70,650 ft^3

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53.
 	
Find the Volume of a cube with edge equal to 7in.
   Volume: e^3
	54.
	
	Find the area of a trapezoid given b_1=25cm, b_2=17cm, and h=9cm.
	   Area: ½(b_1 + b_2)h

55. Find the area of a circle with diameter of 16 in. (Use 3.14 for π.) **Area: πr^2**	56. Find the Surface Area of a rectangular prism with length = 6in., width = 5 in., and height = 9 in.

57.	58.
A card is selected from a standard deck of 52 cards. What are the odds of selecting a red 9?	Find the sum of the following polynomial:
	$$3(x - 1) + 2x + 3$$
a) 1:26 b) 1:52 c) 1:13 d) 1:2	a) $5x + 6$ b) $6x - 6$ c) $5x - 6$ d) $5x$
59. Find the difference. $(4x + 2y - 10) - 3(2x + 5y - 1)$ a) $10x - 13y - 7$ b) $-10x + 13y + 7$ c) $-2x - 13y - 7$ d) $-2x + 13y + 7$	**60.** What percent of 115 is 23? a) 5% b) 20% c) 50% d) 80%

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