Math Power

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Name: (First)_____(Last)_____

School: _____ Grade:_____

Numbers

1. 55% of what number is 38.5?

2. What percent of 95 is 76?

3. What percent of 120 is 72?

4. What percent of 40 is 46?

5. 25% of 440

6. What percent of 20 is 26?

7. What part of 30 is 40?

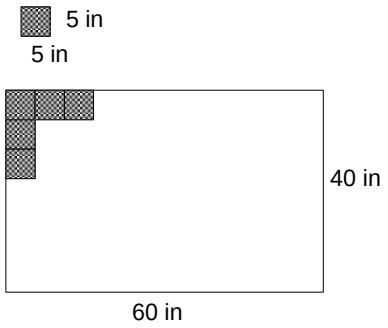
8. 60% of 1600

9. What part of 0.75 is 0.5

10. 20% of 750

GT Integrated Review

11. A rectangle is to be decorated along its sides by surrounding smaller squares. The dimensions are shown below. What is the area covered?



12. $3^2 \times 5^0$ = _____

13. 42 minutes = (in fractions) hour.
(Your answer must be in lowest terms).

14. 20 × 600 =

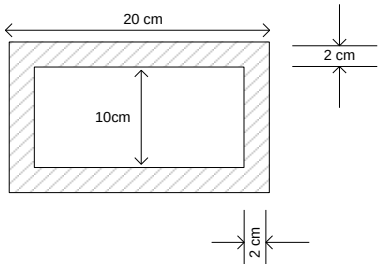
15. $80\times1000 = 8\times10^{a}$
a =

16. $2^5\times7 - 2^3 - 2$ =

17. Find the greatest common factor of 80 and 64.

18. $1^3\times3^1 + 5^0\times0^5$=

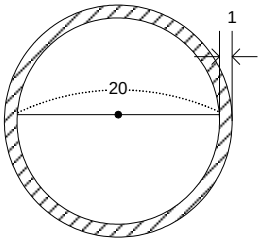
19. Find the area of the shaded part.



20. The area of a square is 64 sq. inches. Find the perimeter of the square.

21. $\sqrt{1-\frac{15}{64}}$ =

22. Find the area for the shaded region. (Leave π in your answer.)



23. Simplify $1\frac{1}{2}\times2\frac{2}{3}$.

24. 9.2 + 7.7 - 0.6 × 3.8 =

25. Reduce your fraction whenever possible.

$$\begin{array}{r} \frac{5}{24} \\ +\ \frac{3}{8} \\ \hline \end{array}$$

26. $(-.2)^3$ =

27. $(\frac{1}{2})^2 - (\frac{1}{3})^3 =$

33. Write $\frac{3\frac{1}{5}}{5\frac{1}{3}}$ in decimals.

Question set [**28 - 30**]

1 yd = 3 ft
1 ft = 12 in

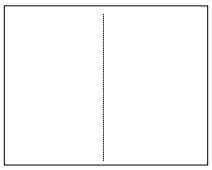
28. 10 yd = _____ in.

29. 180 in = _____ yd.

30. A square has an area of 3600 ft^2. What is the same area in yd^2?

34. If the perimeter of a rectangle is $2y$ and the length is 6, what is the width of the rectangle?

35. Two identical rectangles, each with a perimeter of 36 in, are combined to make a square below. Find the area of the square.



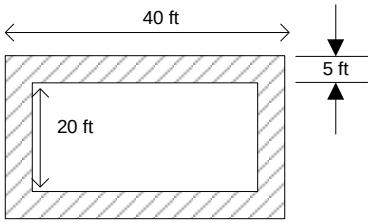
GT7 Integrated Review

31. If Scott hits 45 balls in 60 baseball games, how many balls will he hit in 160 games?

32. If $\frac{1}{6}$ inch represents 1½ mile on a map, what is the actual length of a 12 inches highway on the map?

36. 7 - 8 + 9 - 10 + 12 - 13 + 16 - 17 + 21 =

37. A path 5-ft wide is laid around a rectangular garden. What is area of the path?



38. Express the answer in scientific notation: $(5\times10^5)^5$

39. $-3(4 - 4x) = -72$

40. If a man pays a water bill of $6.75 every three months, how much does he pay for 1½ year?

41. How long (in minutes) will it take Tom to ride 10 miles on his bike at 6 miles per hour?

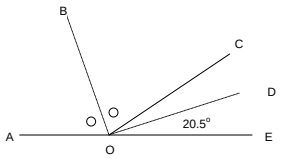
42. 48 is 25% of what number?

43. Consider 99 numbers in the following the pattern:
1, 2, -3, 4, 5, -6, 7, 8, -9, …
What is the sum of the last three numbers?

44. $3^5 \times 12^5 = \square^{10}$

45. Express $\frac{6}{8}$ as a percent.

46. In the figure below, OB bisects ∠AOC and OD bisects ∠COE. Find the measure of ∠BOD.



47. Bill gets up at 7:20 A.M. every morning. If he needs 9½ hours of sleep, at what time he must go to sleep?

48. $(-1)^{1\times2\times3\times4\times5} =$

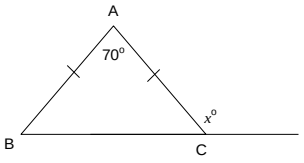
49. $\frac{1}{2}x + \frac{2}{3}x = 14$

50. If 2 bushels of seed can cover an acre of land, how many bushels of seed are needed to plant 28 acres?

Exam Review

51. A line with x-intercept = -3, and y-intercept = 5. Find the linear equation in slope-intercept form.

52. ΔABC is an isosceles. Find the value of x.



53. Rebecca is 12.5% taller than Debbie. If Debbie is 64 inches tall, how tall is Rebecca?

54. A bank pays 4% interest per year for a certificate of deposit (CD). If Jenna deposited $1,200 in her account, what will her balance be after 18 months?

55. The price of a $60 calculator has increased by 20%. If there is a 5% sales tax, how much do you need to pay for this calculator?

Question set [**56 - 58**]

ABCD is a rectangle. AC is a diagonal. PQ and RS intersect at O. AR = 3, RD = 5, and BP = 10.

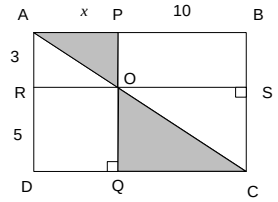


Figure not drawn to scale.

56. AP = x, what is the value of x?
A) 2
B) 4
C) 6
D) 8

57. What is the area ratio of ΔAPO to ΔQCO?
A) 1 : 2
B) 3 : 5
C) 9 : 15
D) 9 : 25

58. Label the areas of the four shaded triangles as a, b, c, and d.

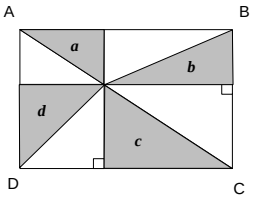
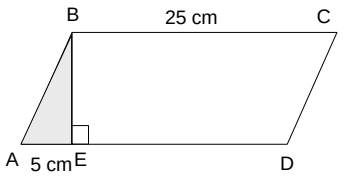


Figure not drawn to scale.

How are these quantities related?
A) $ac = bd$
B) $a + c = b + d$
C) $|a - c| = |b - d|$
D) $\frac{a}{c} = \frac{b}{d}$

59. Evaluate $5x^2 - 30x + 45$ when $x = 3.2$. (Hint: Any smart way.)

60. The area of (shaded) ΔABE is 25 square centimeters.

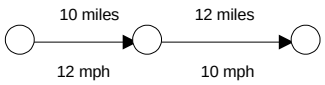


What is the area of parallelogram ABCD?

61. If $7^x = 4$, what does 7^{-2x} equal? (Exact answer is expected.)

62. If $2x - 3y + 7 = 15$, how do you express the quantity of $6y + 5$ in terms of x?

63. In the morning, Jason rode his bike for 10 miles at a speed of 12mph. In the afternoon, he rode his bike for 12 miles at a speed of 10 mph. What was his average speed for the day?



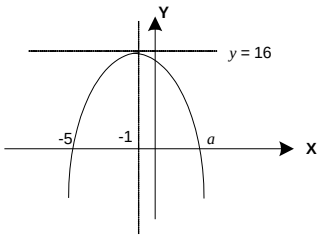
Question set [**64 - 65**]

Patrick gets paid three dollars less than four times what Kevin gets paid.

64. If the number of dollars that Kevin gets paid is represented by k, what does Patrick get paid?
(A) $3 - 4k$
(B) $3k - 4$
(C) $4k - 3$
(D) $4 - 3k$

65. If the number of dollars that Patrick gets paid is represented by p, what does Kevin get paid?
(A) $3 - 4p$
(B) $3p - 4$
(C) $4(p - 3)$
(D) $\frac{1}{4}(p + 3)$

66. A parabola is depicted below, what is the value of a?



67. Express the answer in scientific notation:
$\sqrt{3 \times 10^5} \cdot \sqrt{1.2 \times 10^6} =$

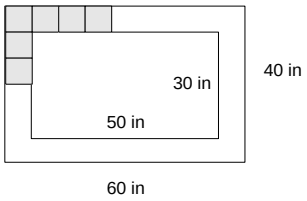
68. Express the answer in scientific notation:
$(1.2\times10^{4})\div(2.5\times10^{-2})$

69. Let n represent a square number. Express the next square number. (Hint: Experiment your answer through simple example, such as 25 and 36.)

70. Which of the following is the odd one out?
A) $\frac{-x^3}{y^2}$
B) $-\frac{x^3}{y^2}$
C) $\frac{-x^3}{(-y)^2}$
D) $\frac{(-x)^3}{y^2}$
E) $\frac{(-x)^3}{-y^2}$

Answer Key

1. $38.5 \div 55\% = 70$
2. $76 \div 95 = .8 = 80\%$
3. $72 \div 120 = .6 = 60\%$
4. $46 \div 40 = 1.15 = 115\%$.
5. $440 \times 25\% = 110$
6. $26 \div 20 = 1.30 = 130\%$
7. $40/30 = \frac{4}{3} = 1\frac{1}{3}$
8. $60\% \times 1600 = 0.6 \times 1600 = 960$
9. $0.5/0.75 = \frac{2}{3}$, and indeed $\frac{2}{3} \times 0.75 = 0.5$
10. $20\% \times 750 = 150$
11. $40 \times 60 - 1500 =$ $\boxed{900 \text{ in}^2}$



12. 9
13. $\frac{7}{10}$
14. $20 \times 600 = 12000$
15. $80 \times 1000 = 80000 = 8 \times 10^{\boxed{4}}$
16. 214
17. 16
18. 3
19. $20 \times 14 - 16 \times 10 = 280 - 160 = 120$
20. $64 = 8 \times 8$
    $8 \times 4 =$ $\boxed{32 \text{ in}}$
21. $\frac{7}{8}$
22. $11^2\pi - 10^2\pi =$ $\boxed{21\pi}$
23. $1\frac{1}{2} \times 2\frac{2}{3} = \frac{3}{2} \times \frac{8}{3} = 4$
24. 14.62
25. $\begin{array}{r} \frac{5}{24} \\ + \quad \frac{3}{8} \\ \hline \frac{14}{24} = \frac{7}{12} \end{array}$
26. -0.008
27. $(\frac{1}{2})^2 - (\frac{1}{3})^3 = \frac{1}{4} - \frac{1}{27} = \frac{23}{108}$
28. 10 yd = 30 ft = $\boxed{360 \text{ in}}$
29. $180 \div 12 = 15$
    $15 \div 3 =$ $\boxed{5 \text{ yd}}$
30. $3600 \div 9 =$ $\boxed{400 \text{ yd}^2}$
31. 45 out of 60 = ¾
    $160 \times ¾ =$ $\boxed{120}$
32. $12 \div \frac{1}{6} \times 1½ =$ $\boxed{108 \text{ mi}}$
33. 0.6
34. $y - 6$
35. Let x be each side of the square.
    The perimeter of a rectangle is $3x = 36$.
    $x = 12$
    $x^2 =$ $\boxed{144 \text{ in}^2}$
36. $7 + (-8+9) + (-10+12) + (-13+16) + (-17+21)$
    $= 7 + 1 + 2 + 3 + 4$
    $= 17$
37. What is the width of the outer rectangle?
    $20 + 2 \times 5 = 30$
    What is the length of inner rectangle?
    $40 - 2 \times 5 = 30$
    The area of the path:
    $40 \times 30 - 30 \times 20 = 1200 - 600 =$ $\boxed{600 \text{ ft}^2}$
38. 3.125×10^{28}
39. $x = -5$
40. 1½ year = 18 months = 6 quarters
    $6.75 \times 6 = \$40.50$
41. time = $\frac{\text{distance}}{\text{speed}} = \frac{10}{6} \times 60 =$ $\boxed{100 \text{ min}}$
42. 192
43. Group them every 3 numbers. The sums of these groups are
    0, 3, 6, …, 96
    The sum of 97, 98, and -97 is $\boxed{96}$.
44. 6
45. 75% = 0.75
46. 90
47. 7:20 A.M. - 9:30 = 9:50 P.M.
48. $(-1)^{\text{even}} = \boxed{1}$
    [Note: $(-1)^{\text{even}} = 1$, $(-1)^{\text{odd}} = -1$]
49. $½x + ⅔x = 14$
    $6(½x + ⅔x) = 6 \times 14$
    $3x + 4x = 84$
    $7x = 84$
    $x =$ $\boxed{12}$
50. $2 \times 28 = 56$

51. $y = \frac{5}{3}x + 5$
The intercept form is
$$\frac{x}{-3} + \frac{y}{5} = 1$$
$y = \frac{5}{3}x + 5$ (the slope-intercept form)

52. $\frac{1}{2}(180 - 70) = 55$
$x = 70 + 55 =$ 125 (exterior angle theorem)
or
$x = 180 - 55 = 125$ (supplementary angle)

53. $64 \times 12.5\% = 64 \times \frac{1}{8} = 8$
$64 + 8 =$ 72

54. 18 mon = 1.5 yr
$4\% \times 1.5 \times 1200 = 6\% \times 1200 = 72$
$72 + 1200 =$ 1272

55. Since there is a 20% increase, it becomes 1.2 times
$60 \times 1.2 = 72$
After 5% tax
$72 \times 1.05 =$ $75.60

56. C
$\frac{3}{5} = \frac{x}{10}$
$x = 6$

57. D
Two triangles are similar.
The area ratio is the side ratio squared
$= (3 : 5)^2 = 9 : 25$

58. A
Let
x = AP; y = BP; z = BS; w = CS
Then
$2a = xz$; $2c = wy$
$2b = yz$; $2d = xw$
$4ab = xyzw = 4cd$
$ab = cd$

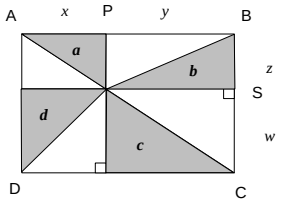


Figure not drawn to scale.

59. $5x^2 - 30x + 45$
$= 5(x^2 - 6x + 9)$
$= 5(x - 3)^2$
$= 5 \times .2^2$
$= 5 \times 0.2 \times 02$
$=$ 0.2

60. height $= 2 \times 25 \div 5 = 10$
$25 \times 10 =$ 250 sq cm.

61. $\frac{1}{16}$

62. $3y = 2x - 8$
$6y + 4$
$= 4x - 16 + 5$
$=$ $4x - 11$

63. $\frac{10}{12} = \frac{5}{6}$ hour
$\frac{12}{10} = \frac{6}{5}$ hours
$\frac{5}{6} + \frac{6}{5}$ hours.
Total distance: 10+12=22 miles.
average speed $= \frac{\text{total distance}}{\text{total time}} = \frac{22}{\frac{5}{6}+\frac{6}{5}} = \frac{660}{61} \approx 10.8$

64. C
$p = 4k - 3$

65. D
$p = 4k - 3$
$k = \frac{1}{4}(p + 3)$

66. The midpoint of -5 and a is -1, $a =$ 3.

67. $\sqrt{3.6 \times 10^{11}} = \sqrt{36 \times 10^{10}} =$ 6×10^5

68. 4.8×10^5

69. $n + 2\sqrt{n} + 1$

70. E