

Number Sense Exam 013, 2/24/2017

- (1) Which is smaller: $-\frac{11}{15}$ or $-\frac{9}{13}$? _____
- (2) $3.2 \div .8 =$ _____
- (3) $(-3) \times 1\frac{1}{2} =$ _____ (mixed number)
- (4) $2014 \times 4 + 6 =$ _____
- (5) $15 \times 28 =$ _____
- (6) $\frac{5}{6} \times 1\frac{1}{5} =$ _____
- (7) $7.5\% =$ _____ (proper fraction)
- (8) $3^0 + 2 \times 5 + 4^{-1} =$ _____ (decimal)
- (9) $2008 + 8002 =$ _____
- *(10) $213 + 4711 + 1829 - 47 =$ _____
- (11) $111 \times 212 =$ _____
- (12) $3 + 7 + 11 + 15 + 19 + \dots + 35 =$ _____
- (13) $13 + 18 + 23 + 28 + 33 + 38 =$ _____
- (14) $14^3 =$ _____
- (15) $3 + 5 + 7 + 9 + \dots + 25 =$ _____
- (16) $11^5 \div 121 =$ _____
- (17) $\text{CCCXIV} + \text{MMIX} =$ _____ (Arabic Numeral)
- (18) $\frac{1}{3} - \frac{1}{9} - \frac{1}{18} =$ _____ (proper fraction)
- (19) $16 \times \frac{16}{19} =$ _____ (mixed number)
- *(20) $28533 \div 123 =$ _____
- (21) Find the area of a square whose diagonal is 8in. .
sq. inches
- (22) How many 3-element subsets does the set
 $\{p, r, e, c, a, l\}$ have? _____
- (23) $122_6 =$ _____ $_{10}$
- (24) 123 base 10 equals _____ base 5
- (25) $.242424\dots =$ _____ (fraction)
- (26) $7^3 =$ _____
- (27) 37.5% of a gallon is _____ pints
- (28) 24% of _____ is 28% of 12.
- (29) 1123 base 5 is equivalent to _____ base 10
- *(30) $86013 \div 216 =$ _____
- (31) If $a = 5$ and $b = 3$, then $(a - b)(a^2 + ab + b^2) =$ _
- (32) 134 base 7 is equivalent to _____ base 10
- (33) $3^3 + 3^2 + 3^0 =$ _____ base 3
- (34) If the diagonal of a square is $\frac{3\sqrt{2}}{4}$ inches, then the
perimeter of the square is _____ inches
- (35) $\sqrt{175} + \sqrt{112} = \sqrt{x}$. Find x . _____
- (36) $13 \times 154 =$ _____
- (37) If $2x^3 + 3x^2 - 11x - 6 = 0$ and $P, Q,$ and R are the
real roots, then $PQ + QR + PR$ is _____
- (38) The cube root of 1225043 is _____
- (39) Find the units digit of 13^8 . _____
- *(40) $\sqrt[3]{1730} \times \sqrt{142} \times 12 =$ _____
- (41) One leg of a right triangle is 40 and the hypotenuse
is 41. The length of the other leg is _____
- (42) If $3^4 \times 3^k \div 3^5 = 3^2$ then $k =$ _____
- (43) $(2! + 3!) \div 5! =$ _____
- (44) If P is 20% of Q and Q is 25% of R , then P is
what percent of R ? _____ %

- (45) $312_4 = \underline{\hspace{2cm}}_2$
- (46) 60 miles per hour = $\underline{\hspace{2cm}}$ feet per second
- (47) If $x + 4y = 5$ and $x - 3y = 4$ then $y = \underline{\hspace{2cm}}$
- (48) $64 \div .125 = \underline{\hspace{2cm}}$
- (49) The 11th term of the arithmetic sequence 12, 9.5, 7, 4.5, ... is $\underline{\hspace{2cm}}$
- *(50) $42.8571 \times 85 = \underline{\hspace{2cm}}$
- (51) How many integers between 3 and 30 are relatively prime to 30? $\underline{\hspace{2cm}}$
- (52) The simplified coefficient of the x^2y term in the expansion of $(x - 3y)^3$ is $\underline{\hspace{2cm}}$
- (53) If $\log_{16}(4x) = \frac{3}{4}$, then $x = \underline{\hspace{2cm}}$
- (54) $71 \times 79 - 9 = \underline{\hspace{2cm}}$
- (55) Y varies directly with X and $Y = 2$ when $X = 6$. Find Y when $X = 1$. $\underline{\hspace{2cm}}$
- (56) The larger root of $11x^2 - 8x - 3 = 0$ is $\underline{\hspace{2cm}}$
- (57) $(5 - 7i)(5 + 7i) = a + bi$. Find $a + b$ $\underline{\hspace{2cm}}$
- (58) The point $(3, 1)$ is reflected across the line $y = x$ to the point (h, k) . Find k . $\underline{\hspace{2cm}}$
- (59) The vertex of the parabola $y = x^2 - 2x - 3$ is (c, d) . $c = \underline{\hspace{2cm}}$
- *(60) $12^3 \times 8^2 \div 4 = \underline{\hspace{2cm}}$
- (61) How many minutes are there from 3:45 a.m. to 6:15 p.m. in one day? $\underline{\hspace{2cm}}$
- (62) If $f(x) = x^3 - 3x^2 + 3x - 1$, then $f(4) = \underline{\hspace{2cm}}$
- (63) 630° equals $k\pi$ radians. Find k . $\underline{\hspace{2cm}}$
- (64) $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix} + \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$. Find $b + c$. $\underline{\hspace{2cm}}$
- (65) How many 3-digit integers are even? $\underline{\hspace{2cm}}$
- (66) Find k , $0 \leq k \leq 7$ if $\frac{(5!)(3!)}{(4!)} \equiv k \pmod{8}$. $\underline{\hspace{2cm}}$
- (67) $(\tan 30^\circ) \times (\sin 60^\circ) = \underline{\hspace{2cm}}$
- (68) How much time has past from 2:15 pm to 11:30 pm in one day? $\underline{\hspace{2cm}}$ hours
- (69) The simplified coefficient of the x^2 term in the expansion of $(2x - 3)^3$ is $\underline{\hspace{2cm}}$
- *(70) $(e + \pi)^3 = \underline{\hspace{2cm}}$
- (71) Change .12 base 3 to a base 10 fraction. $\underline{\hspace{2cm}}$
- (72) Find the least value of k so that the six digit number $3467k2$ is divisible by 6. $k = \underline{\hspace{2cm}}$
- (73) $\int_0^2 x^3 dx = \underline{\hspace{2cm}}$
- (74) Given the sequence 1, 5, 14, 30, 55, k , 140, ...
 $k = \underline{\hspace{2cm}}$
- (75) The sum of the first 9 terms of the Fibonacci characteristic sequence , 1, 4, 5, 9, 14, 23, ... is $\underline{\hspace{2cm}}$
- (76) Find x , if $\det \begin{bmatrix} 1 & -2 \\ x & 4 \end{bmatrix} = 5$. $\underline{\hspace{2cm}}$
- (77) If $f(x) = 3x^2 - 1$ and $g(x) = 2x - 3$, then find $f(g(4))$. $\underline{\hspace{2cm}}$
- (78) $15^2 - 12^2 + 5 = \underline{\hspace{2cm}}$
- (79) $\frac{1}{3} + \frac{1}{6} + \frac{1}{10} + \frac{1}{15} = \underline{\hspace{2cm}}$
- *(80) 5432 miles/hour = $\underline{\hspace{2cm}}$ feet/second