

$$\textcircled{1} \quad 2(5x-2) = 8x$$

$$10x - 4 = 8x$$

$$10x - \cancel{4} + \cancel{4} = 8x + 4$$

$$10x = 8x + 4$$

$$10x - 8x = 8x + 4 - 8x$$

$$2x = 4$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

$$\textcircled{2} \quad 5(y-4) = 7y-20$$

$$5y - 20 = 7y - 20$$

$$5y - \cancel{20} + \cancel{20} = 7y - 20 + 20$$

$$5y = 7y$$

$$5y - 7y = 7y - 7y$$

$$-2y = 0$$

$$\frac{-2y}{-2} = \frac{0}{-2}$$

$$y = 0$$

①

TSI's step
05/017

3.

$$5x - 6 = 2x - 30$$

$$5x - \cancel{6} + 6 = 2x - 30 + 6$$

$$5x = 2x - 24$$

$$5x - 2x = \cancel{2x} - 24 - \cancel{2x}$$

$$3x = -24$$

$$\frac{3x}{3} = \frac{-24}{3}$$

$$x = -8$$

2.

4.

$$\frac{x}{5} = \frac{x}{6} + \frac{2}{5} \quad \text{LCD} = 30$$

$$\frac{x}{5}(30) = \frac{x}{6}(30) + \frac{2}{5}(30)$$

$$x(6) = x(5) + 2(6)$$

$$6x = 5x + 12$$

$$6x - 5x = \cancel{5x} + 12 - \cancel{5x}$$

$$1x = 12$$

$$x = 12$$

5 Find Mean

17, 1, 16, 16, 7, 19, 3, 17

$$\frac{17+1+16+16+7+19+3+17}{8} =$$

$$\frac{96}{8} =$$

$$12 = \text{Mean}$$

6 Find the Median.

4, 6, 25, 23, 43, 47

4, 6, 23, 25, 43, 47

$$\frac{23+25}{2} =$$

$$\frac{48}{2} =$$

$$24 = \text{Median}$$

40

$$\textcircled{7} \quad \frac{x+8}{x} = \frac{4}{3}$$

$$3(x+8) = x(4) \quad \text{cross mult} \quad \Rightarrow$$

$$3x + 24 = 4x$$

$$3x + 24 - 24 = 4x - 24$$

$$3x = 4x - 24$$

$$3x - 4x = 4x - 24 - 4x$$

$$-1x = -24$$

$$\frac{-1x}{-1} = \frac{-24}{-1}$$

$$x = 24$$

$\textcircled{8}$ 19 is 4% of what number?

$$\frac{4}{100} = \frac{19}{x}$$

$$4(x) = 100(19) \quad \text{cross mult}$$

$$4x = 1900$$

$$\frac{4x}{4} = \frac{1900}{4}$$

$$x = 475$$

$$\begin{array}{r} 475 \\ 4 \overline{) 1900} \\ \underline{-(16)} \\ 30 \end{array}$$

$$\underline{-(28)} $$

$$\begin{array}{r} 20 \\ \underline{-(20)} \\ 0 \end{array}$$

rem

9) A bag contains 2 red marbles, 7 blue marbles, and 3 green marbles. What is the probability of choosing a blue marble when one marble is drawn?

$$\frac{\text{want}}{\text{all}} =$$

$$\frac{7}{2+7+3} =$$

$$\frac{7}{12} =$$

10) A bag contains 7 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

$$\frac{\text{want}}{\text{all}} =$$

$$\frac{7+1}{7+2+1} =$$

$$\frac{8}{10} =$$

$$\frac{4(2)}{5(2)} =$$

$$\frac{4}{5} =$$

11. A new drug is being tested that is supposed to lower cholesterol. This drug was given to 200 people and the results are below.

Lower
Cholesterol

134

Higher
Cholesterol

8

Cholesterol
Not Changed

58

If a person is testing this drug, what is the probability that their cholesterol will be lower?

$$\frac{\text{want}}{\text{all}} =$$

$$\frac{134}{200} =$$

$$\frac{2(67)}{2(100)} =$$

$$\frac{67}{100} =$$

12. The length of a rectangle is 148 in and the width is 36 in. Find the perimeter. (1)

$$P = 2L + 2W$$

OR

$$P = 2(L + W)$$

$$P = 2(148 + 36)$$

$$P = 2(184)$$

$$P = 368$$

13. Find the area

$$r = \frac{1}{2}d = \frac{1}{2}(9) = \frac{9}{2} = 4.5$$



$$A = \pi r^2$$

$$A = 3.14(4.5)^2$$

$$A = 3.14(4.5)(4.5)$$

$$A = 3.14(20.25)$$

$$A = 63.585 \text{ sq ft}$$

$$\begin{array}{r} 4.5 \\ 2 \overline{) 9.0} \\ \underline{-(8)} \\ 10 \\ \underline{-(10)} \\ 0 \end{array} \text{ OR}$$

14) $C = \frac{5}{9}(F - 32)$ Find C if $F = 212$ 8.

$$C = \frac{5}{9}(212 - 32)$$

$$C = \frac{5}{9}(180)$$

$$C = 5(20)$$

$C = 100$

$$\begin{array}{r} 212 \\ - 32 \\ \hline 0 \end{array}$$

15. $p = 2l + 2w$, $p = 28$, $w = 6$ find l

$$28 = 2L + 2(6)$$

$$28 = 2L + 12$$

$$28 - 12 = 2L + 12 - 12$$

$$16 = 2L$$

$$\frac{16}{2} = \frac{2L}{2}$$

$$\delta = L$$

16. $-16x - 32 \leq -4(3x + 3)$

$$-16x - 32 \leq -12x - 12$$

$$-16x - \cancel{32} + \cancel{32} \leq -12x - 12 + 32$$

$$-16x \leq -12x + 20$$

$$-16x + 12x \leq -12x + 20 + 12x$$

$$-4x \leq 20$$

Turn the alligator around

$$\frac{-4x}{-4} \geq \frac{20}{-4}$$

$$x \geq -5$$

$$[-5, +\infty)$$

17) Is the ordered pair a solution?

$$-2y + 3x = -15 \quad (5, 0)$$

x y

$$-2(0) + 3(5) = -15$$

$$0 + 15 = -15$$

$$15 \neq -15$$

NO

9

18) graph $y = \frac{1}{8}x + 4$

$$y = \frac{1}{8}(0) + 4$$

$$y = 0 + 4$$

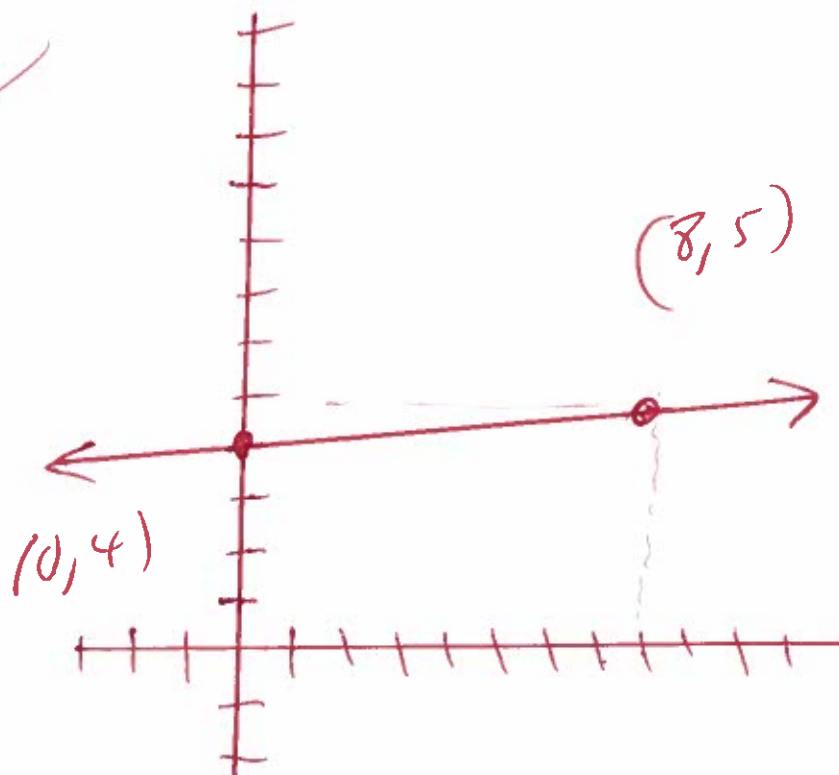
$$y = 4$$

x	y
0	4
8	5

$$y = \frac{1}{8}(8) + 4$$

$$y = 1 + 4$$

$$y = 5$$



(19) $f(x) = 3x^2 + 3x - 6$ Find $f(-3)$

$$f(-3) = 3(-3)^2 + 3(-3) - 6$$

$$f(-3) = 3(-3)(-3) + 3(-3) - 6$$

$$f(-3) = 3(9) + 3(-3) - 6$$

$$f(-3) = 27 - 9 - 6$$

$$f(-3) = 18 - 6$$

$$f(-3) = 12$$

(10)

(20) Solve

$$-2x + 3y = 2$$

$$-3x + 5y = 2$$

$$(-2x + 3y)(-5) = 2(-5) \text{ Mult}$$

$$(-3x + 5y)(3) = 2(3) \text{ Mult}$$

$$10x - 15y = -10$$

$$-9x + 15y = 6$$

$$x = -4$$

Subst

$$-2x + 3y = 2$$

$$-2(-4) + 3y = 2$$

$$8 + 3y = 2$$

$$8 + 3y - 8 = 2 - 8$$

$$3y = -6$$

$$\frac{3y}{3} = \frac{-6}{3}$$

$$y = -2$$

$$(x, y) = (-4, -2)$$

21. Find the area of the circle.



116

$$A = \pi r^2$$

$$A = \pi (6y)^2$$

$$A = \pi (6y)(6y)$$

$$A = \pi (36y^2)$$

$$A = 36y^2 \pi \text{ sq cm}$$

22. $(2a^4b)^2 =$

$$(2^1 a^4 b^1)^2 =$$

$$2^{1(2)} a^{4(2)} b^{1(2)} =$$

$$2^2 a^8 b^2 =$$

$$2 \cdot 2 a^8 b^2 =$$

$$4a^8b^2 =$$

23. $\left(\frac{xy}{4}\right)^2 =$

$$\left(\frac{xy}{4}\right) \left(\frac{xy}{4}\right) =$$

$$\frac{x^2 y^2}{16} =$$

$$(24) \quad \frac{45m^3n^7}{9m^2n^5} =$$

$$\frac{9(5)m^{3-2}n^{7-5}}{9} =$$

$$5m^1n^2 =$$

$$5mn^2 =$$

(12.)

$$(25) \quad (-4z^2)(5z^3) =$$

$$-20z^{2+3} =$$

$$-20z^5 =$$

$$(26) \quad P(x) = 3x^2 - 6x \quad \text{find } P(-5)$$

$$P(-5) = 3(-5)^2 - 6(-5)$$

$$P(-5) = 3(-5)(-5) - 6(-5)$$

$$P(-5) = 3(25) - 6(-5)$$

$$P(-5) = 75 + 30$$

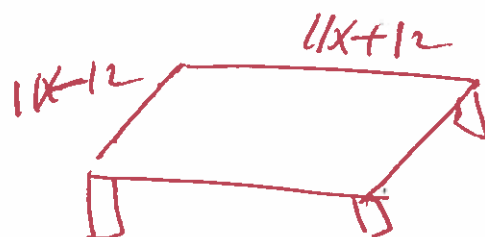
$$P(-5) = 105$$

$$(27) \quad -5x^1(-8x^2 + 2x - 3) =$$

$$40x^{1+2} - 10x^{1+1} + 15x^1 =$$

$$40x^3 - 10x^2 + 15x =$$

28. Find the area



$$A = L \cdot W$$

$$A = (11x+12)(11x-12)$$

$$A = 121x^2 - 132x + 132x - 144$$

$$= (121x^2 - 144) \text{ sq in}$$

29. Find volume

$$V = LWH$$

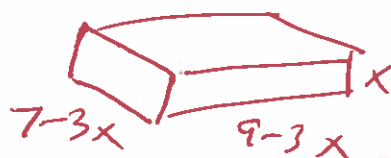
$$V = (9-3x)(7-3x)(x)$$

$$V = (63 - 27x - 21x + 9x^2)(x)$$

$$V = (63 - 48x + 9x^2)(x)$$

$$V = 63x - 48x^2 + 9x^3$$

$$= 9x^3 - 48x^2 + 63x$$



$$L = 9-3x$$

$$W = 7-3x$$

$$H = x$$

30. $(3a-7)^2 =$

$$(3a-7)(3a-7) =$$

$$9a^2 - 21a - 21a + 49 =$$

$$9a^2 - 42a + 49 =$$

(14)

31. $5^{-4} =$

$$\frac{1}{5^4} =$$

$$\frac{1}{5 \cdot 5 \cdot 5 \cdot 5} =$$

$$\frac{1}{625} =$$

32. $\frac{6r^8 - 10r^3}{2r} =$

$$\frac{6r^8}{2r^1} - \frac{10r^3}{2r^1} =$$

$$3r^{8-1} - 5r^{3-1} =$$

$$3r^7 - 5r^2 =$$

33. Factor GCF

$$30x + 10 =$$

$$10(3x + 1) =$$

34. Factor GCF

$$20x^4y^1 + 36x^1y^3 =$$

$$4x^1y^1(5x^3 + 9y^2) =$$

$$4xy(5x^3 + 9y^2) =$$

35 factor

$$x^2 - x - 56 =$$

$$(x+7)(x-8) =$$

56.1
28.2
14.4
7.8

possible

15

36

~~factor~~
factor

$$x^2 + 3xy - 18y^2 =$$

$$(x-3y)(x+6y) =$$

18.1
9.2
6.3

possible

37

factor

$$81x^2 - 49 =$$

$$(9x)^2 - (7)^2 =$$

$$(9x+7)(9x-7) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

38

factor

$$x^2 - \frac{25}{64} =$$

$$(x)^2 - \left(\frac{5}{8}\right)^2 =$$

$$\left(x + \frac{5}{8}\right)\left(x - \frac{5}{8}\right) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

39. Solve

$$X(X+17)=0$$

Let $X=0$ OR $X+17=0$

$$X+17-17=0-17$$

$$X=-17$$

16

40. Solve

$$X^2+2X-80=0$$

$$(X-8)(X+10)=0$$

Let $X-8=0$ OR $X+10=0$

$$X-8+8=0+8 \text{ OR } X+10-10=0-10$$

$$X=8 \text{ OR } X=-10$$

80.1
40.2
20.4
10.8
5.16

~~possible~~

41. Solve

$$X^2+3X=28$$

$$X^2+3X-28=0$$

$$(X-4)(X+7)=0$$

Let $X-4=0$ OR $X+7=0$

$$X-4+4=0+4 \text{ OR } X+7-7=0-7$$

$$X=4 \text{ OR } X=-7$$

28.1
14.2
4.7

possible

42.

Solve

$$10x^3 + 70x^2 + 120x = 0$$

Possible

(17)

$$10x(x^2 + 7x + 12) = 0$$

$$10x(x+3)(x+4) = 0$$

12.1
6.2
3.4

Let $10x = 0$

OR $x+3=0$

OR $x+4=0$

$$\frac{10x}{10} = \frac{0}{10}$$

OR $x+3-3=0-3$

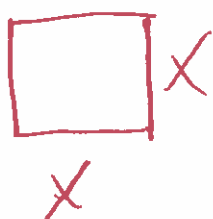
OR $x+x-x=0-4$

$x=0$

OR $x=-3$

OR $x=-4$

43. The area of a square is 49 square miles. Find the length of a side of the square.



area = 49

$$A = LW$$

$$A = (x)(x) = 49$$

$$x^2 = 49$$

$$\sqrt{x^2} = \sqrt{49}$$

$x = 7$ miles

44 $f(x) = \frac{x-8}{6x+7}$ find $f(-2)$

$$f(-2) = \frac{(-2)-8}{6(-2)+7}$$

$$f(-2) = \frac{-2-8}{-12+7}$$

$$f(-2) = \frac{-10}{-5}$$

$$f(-2) = 2$$

16

45.

$$\frac{2x^2}{4} \cdot \frac{24}{x^3} =$$

$$\frac{\cancel{2} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{2} \cdot \cancel{2}} \cdot \frac{\cancel{2} \cdot \cancel{2} \cdot \cancel{2} \cdot 3}{\cancel{x} \cdot \cancel{x} \cdot \cancel{x}} =$$

$$\frac{12}{x} =$$

Primes 2, 3, 5, 7, ...
factor

$$\begin{array}{r} 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array}$$

$$\leftarrow 4 = 2 \cdot 2$$

$$\begin{array}{r} 2 \overline{) 24} \\ 2 \overline{) 12} \\ 2 \overline{) 6} \\ 3 \overline{) 3} \\ 1 \end{array}$$

$$\leftarrow 24 = 2 \cdot 2 \cdot 2 \cdot 3$$

46

$$\frac{x+3}{4} = \frac{x+4}{5}$$

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

$$5x + 15 = 4x + 16$$

$$5x + 15 - 15 = 4x + 16 - 15$$

$$5x = 4x + 1$$

$$5x - 4x = 4x + 1 - 4x$$

cross mult

$$1x = 1$$

$$x = 1$$

$$(47) \quad \frac{5-a}{a} + \frac{3}{4} = \frac{7}{a} \quad \text{LCD} = (4a)$$

(19)

$$4a \left(\frac{5-a}{a} \right) + 4a \left(\frac{3}{4} \right) = 4a \left(\frac{7}{a} \right)$$

$$4(5-a) + a(3) = 4(7)$$

$$20 - 4a + 3a = 28$$

$$20 - 1a = 28$$

$$20 - 1a - 20 = 28 - 20$$

$$-1a = 8$$

$$\frac{-1a}{-1} = \frac{8}{-1}$$

$$a = -8$$

$$(48) \quad |x+3| = 6$$

$$|x| = a$$

$$x = -a \quad \text{OR} \quad x = a$$

$$\text{Let } x+3 = -6 \quad \text{OR} \quad x+3 = 6$$

$$x+3-3 = -6-3$$

$$x = -9$$

$$\text{OR} \quad x+3-3 = 6-3$$

$$\text{OR} \quad x = 3$$

$$(49) \quad f(x) = \sqrt{2x+6} \quad \text{find } f(15)$$

$$f(15) = \sqrt{2(15)+6}$$

$$f(15) = \sqrt{30+6}$$

$$f(15) = \sqrt{36}$$

$$f(15) = 6$$

50.

Solve

$$\sqrt{x+4} = 8$$

$$(\sqrt{x+4})^2 = (8)^2$$

$$x+4 = 64$$

$$x + \cancel{4} - \cancel{4} = 64 - 4$$

$$x = 60$$

20.

51.

Solve

$$(x-5)^2 = 36$$

$$\sqrt{(x-5)^2} = \pm\sqrt{36}$$

$$x-5 = \pm 6$$

$$x-5 = -6 \quad \text{OR} \quad x-5 = 6$$

$$x - \cancel{5} + \cancel{5} = -6 + 5 \quad \text{OR} \quad x - \cancel{5} + \cancel{5} = 6 + 5$$

$$x = -1$$

OR

$$x = 11$$

52

Solve by factoring

$$x^2 - 2x - 48 = 0$$

$$(x+6)(x-8) = 0$$

$$\text{Let } x+6=0 \text{ OR } x-8=0$$

$$x+6-6=0-6 \text{ OR } x-8+8=0+8$$

$$x = -6 \text{ OR } x = 8$$

48.1
24.2
12.4
6.8
16.3

possible

21

Solve by Quadratic formula

$$x^2 - 2x - 48 = 0$$

$$a=1, b=-2, c=-48$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-48)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{4 + 192}}{2}$$

$$x = \frac{2 \pm \sqrt{196}}{2}$$

$$x = \frac{2 \pm 14}{2}$$

$$x = 1 \pm 7$$

$$x = 1 - 7 \text{ OR}$$

$$x = 1 + 7$$

$$x = -6$$

OR

$$x = 8$$

53

Solve by factoring

$$2x^2 - 7x - 9 = 0$$

$$(2x-9)(x+1) = 0$$

$$\text{or } 2x-9=0 \quad \text{or } x+1=0$$

$$2x-9+9=0+9 \quad \text{or } x+1-x=0-1$$

$$2x=9 \quad \text{or}$$

$$\frac{2x}{2} = \frac{9}{2}$$

$$x = \frac{9}{2} \quad \text{or}$$

$$x = -1$$

2.1

9.1
3.3

possible

2.2

Solve by the Quadratic Formula

$$2x^2 - 7x - 9 = 0$$

$$a=2, \quad b=-7, \quad c=-9$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-9)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{49 + 72}}{4}$$

$$x = \frac{7 \pm \sqrt{121}}{4}$$

$$x = \frac{7 \pm 11}{4}$$

$$x = \frac{7+11}{4} \quad \text{or} \quad x = \frac{7-11}{4}$$

$$x = \frac{18}{4} \quad \text{or} \quad x = \frac{-4}{4}$$

$$x = \frac{2(9)}{2(2)} \quad \text{or} \quad x = -1$$

$$x = \frac{9}{2} \quad \text{or} \quad x = -1$$

54 graph

$$f(x) = x^2 - 4$$

$$f(-1) = (-1)^2 - 4$$

$$f(-1) = (-1)(-1) - 4$$

$$f(-1) = 1 - 4$$

$$f(-1) = -3$$

$$f(0) = (0)^2 - 4$$

$$f(0) = (0)(0) - 4$$

$$f(0) = 0 - 4$$

$$f(0) = -4$$

$$f(1) = (1)^2 - 4$$

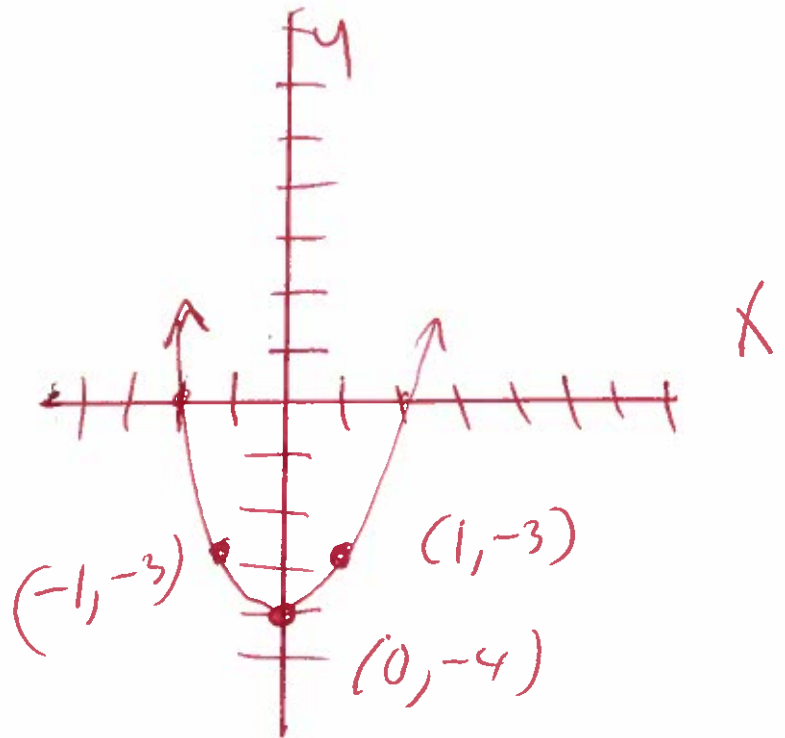
$$f(1) = (1)(1) - 4$$

$$f(1) = 1 - 4$$

$$f(1) = -3$$

x	$f(x)$
-1	-3
0	-4
1	-3

23



55. $N(t) = 4(3)^t$ find $N(5)$

$$N(5) = 4(3)^5$$

$$N(5) = 4(3)(3)(3)(3)(3)$$

$$N(5) = 4(243)$$

$$N(5) = 972$$