Number Bases – Practice Sheet #2

1) Fill in the table.

	Egyptian	Decimal	Scientific
a)			$6.02 \cdot 10^4$
b)		350	
c)	חווו בפצררר		
d)			$3.041 \cdot 10^3$
e)		43,530	

- 2) Convert to standard decimal form.
 - a) $5.03 \cdot 10^5$
 - b) $5.03 \cdot 10^{-3}$
 - c) $5.03 \cdot 10^{-9}$
 - d) $5.03 \cdot 10^{0}$
- 3) Convert to scientific notation.
 - a) 65200
 - b) 700,000,000
 - c) 0.0000063
 - d) 0.000408
 - e) 8.2
- 4) Convert to expanded notation.
 - a) 652
 - b) 8327
 - c) 70,800
- 5) Convert to standard decimal form.
 - a) $5 \cdot 10^2 + 4 \cdot 10^1 + 3 \cdot 10^0$
 - b) $8 \cdot 10^6 + 3 \cdot 10^4$
 - c) $7 \cdot 10^3 + 2 \cdot 10^2 + 6 \cdot 10^0$

- 6) Write down the four numbers that follow each octal (base-eight) number.
 - a) 6_{oct}
 - b) 25_{oct}
- c) 46_{oct}
- d) 52_{oct}
- e) 75_{oct}
- f) 65_{oct}
- g) 146_{oct}
- 7) Write each octal number in expanded notation.
 - a) 73_{oct}
 - b) 163_{oct}
 - c) 345_{oct}
- 8) Convert from octal (base-eight) to decimal (base-ten).
 - a) 37_{oct}
 - b) 52_{oct}
 - c) 5_{oct}
 - d) 107_{oct}
 - e) 234_{oct}
- 9) Convert from decimal to octal.
 - a) 23_{dec}
 - b) 39_{dec}
 - c) 67_{dec}
 - d) 80_{dec}

Mensuration – Practice Sheet #1

Note: In this entire unit, you are allowed to use the *Table of Square Roots* found at the back of this book. However, you will need to use the square root algorithm to calculate the square roots of numbers greater than 100.



Mensuration – Group Sheet #2

Surface area is the sum of 2) 3) a) How many square 1) We have seen the all of the areas of the faces that inches are in a $V = A_{Base} \cdot H$, formula make up a solid. square foot? which is used for Calculate the volumes and calculating the volume of a surface area. box, a prism (e.g. a) b) How many cubic triangular), or a cylinder. inches are in a cubic Around 430 B.C., foot? Democritus, who was Greek, discovered that the volume of a pyramid is exactly $\frac{1}{3}$ the volume of the box that it fits into (i.e., they have the same base Jon has a cylinder, a 4) and height). Similarly, the sphere, and a cone that volume of a cone is $\frac{1}{3}$ the all have the same volume of the cylinder that diameter and height. He it fits into. calculates that the This gives us the formula: volume of each solid is $V = \frac{1}{3}A_{Base} \cdot H$ 165 in³, 110 in³, and 55 in^3 , respectively. Calculate the volume of each solid. a) What is the ratio of the volume of the a) A pyramid has a total cylinder to the sphere height of 150 feet, and to the cone? (This its square base measures b) ratio is known as 200 feet on each side. Archimedes' Ratio. He discovered it around 250B.C.) b) A cone. b) What is the volume of a sphere that has a diameter of 18cm?

Percents & Growth – Practice Sheet #4

 Use the Growth Rate Table. a) Annie put \$100 into a savings account that earns 3% APR. What will the balance of the account be after 20 years? b) The population of a city is about 100,000, and is increasing by 2.5% per year. Approximately, what will its population be in 50 years, if that growth rate continues? c) The value of a certain stock is currently increasing by 30% annually. If it now is valued at \$40 per share, then about how much will it be worth after 12 years, if that growth rate continues? 	 You may use a calculator for the rest of this sheet. You must write down what you put into your calculator. As always, round your answer to three significant digits, when necessary. 3) What is a) 7% of 89.3? b) 1.3% of 730? c) 0.04% of 34,200? d) 320% of 45? e) 458 increased by 12%? f) 6700 decreased by 60%? 4) 18 is what percent a) of 37? b) of 370? c) of 3700? d) of 52 	 Word Problems. 8) A bike normally listed for \$320 is on sale for a 30% discount. What is the new discounted price? 9) Kate bought a house for \$198,000 and then sold it for \$230,000 one year later. What is the profit as a percentage? 10) Fred bought a house for \$230,000 and then sold it for \$198,000 one year later. What is the loss as a percentage? 11) Ed is 64% as tall as Joe. a) How tall is Ed if Joe
 2) Use the <i>Rule of 72</i> to quickly answer each. a) How long does it take for your money to double at a return rate on your investment of 7% per year? 	 5) What percentage increase is it going from a) 480 up to 552? b) 3500 up to 3654? c) 65 up to 150? 	 b) How tall is Joe if Ed is 120cm tall? b) How tall is Joe if Ed is 120cm tall? 12) TJ is 8% taller than Pat.
 b) The price of real estate in Clifton doubled over an eight-year period. What was the average annual growth rate over that period? 	 6) What percentage decrease is it going from a) 420 down to 357? b) 63,500 down to 12,700? 7) a) 456 is 38% of what? 	a) How tall is TJ if Pat is 135cm tall?b) How tall is Pat if TJ is 135cm tall?

13) A bank account increases by 7% per year for 5 years. What is the percentage increase over the 5-year period?

b) 456 is 2.4% of what?

c) 72 is 60% more than what?

d) 9 is 7.1% more than what?

e) 770 is 12% less than what?

Algebra – Practice Sheet #2

Formulas		Expressions		Equations		
1)	Convert 59°F to °C.	Simpl like te	ify by combining rms.	Solve alone.	each equation by getting X Show what is done to each	
		18) 2	X - 7 - 3X - 8	side. 24	V = 0 - 10	
2)	Convert -5° C to $^{\circ}$ F.			34)	X - 8 = 12	
		19) -	-3X - 7 + X - 9			
3)	Convert 70°F to °C.	20) -	-X - 2 - 6X + 8	35)	8X = 40	
4)	Convert 42°C to °F.	21) -	-6 - 4 + 2 - 9 + 4	36)	8X = -40	
		22) -	-2 + -94 - +1	37)	-8X = -40	
5)	Calculate the tance that an object	Orde	r of Operations			
fall	s after being dropped	Simpl	Simplify.		$8 \pm V = 40$	
for	$1\frac{1}{2}$ seconds.	23)	$5 + 3 \cdot 2$	58)	$-0 + \Lambda - 40$	
		24)	(5+3)·2	39)	3X - 1 = 5X + 9	
Signed Numbers Simplify.		25)	7 – 5·3			
6)	-2+7	26)	$(7-5)\cdot 3$			
7)	- 5 + 3					
8)	- 5 - 3	27)	4.5^{2}			
9)	(24)÷(-2)		··· 2	40)	7X + 5 = 9X + 17	
10)	(-24)÷(2)	28)	$(4.5)^2$	10)		
11)	$\frac{-24}{2}$	29)	8 + 20 ÷ 4			
12)	(-24)÷(-2)	Distr	ibutive Property			
13)	$\frac{-24}{-2}$	Simpl	ify.			
14)	138	30)	4(3X-5)			
15)	7 - +2	31)	3(X + 7)	41)	5X - 7 = -X + 3	
16)	7 + -2					
17)	-62 + 2 + 4	32)	-6(7X+4)			
1/)	-02 + -3 - +4	33)	-3(X - 4)			

Algebra – Practice Sheet #6

Simplify.		Solve each equation.	21)	-8X + 3 - 5X = 7 + 2(X - 7)
1)	4 + 3.9	15) $6X = -\frac{4}{5}$		
2)	$6 - 5 \cdot 3 + 20$			
3)	$7 \cdot 3 + 12 \div (9 - 10)$	16) $-8X = -3$		
4) 5)	$30 - 10 \cdot 3^2$	17) $-2\frac{2}{3}X = -\frac{4}{7}$	22)	$\frac{2}{9}(3X - \frac{1}{2}) = \frac{1}{5}X + \frac{1}{3}$
5) 6)	$c^3 \cdot x^2$			
7)	$x^2 \cdot x^5$			
8)	$(x^2)^5$	18) $2\frac{2}{3} - X = -\frac{4}{7}$		
9)	$(x^5)^2$			
10)	$5x^{7} + 8x^{7}$			
11)	$x^{3} - 5x^{3}$	19) $-6X - 11 = -X - 14$	23)	$\frac{3}{5} + \frac{1}{2}(3X-1) = \frac{2}{5}(\frac{3}{2}X-2) - 1\frac{1}{2}$
12)	$5x^4 + 3x^3$			
Evaluate each expression given that $x=3$; $y=-4$.				
13)	5y-6x+3	$20) \frac{-5}{3X+1} = \frac{2}{2X-3}$		
14)	$y^2 - xy + 4$			

24) 8 + 2(3X - 4) - 3X - 4(X + 7) = 5 - 3(X - 6) + 3X + 8(3 - 2X)

25) Challenge! $\frac{2}{5}X - 8\frac{1}{8} - \frac{3}{4}(\frac{14}{15}X - 5\frac{5}{9}) = 2\frac{7}{10}X - 2\frac{5}{6} + \frac{3}{4}(X + 5\frac{1}{6})$