- (1) Christina has decided to remodel her house. She wants to withdraw enough money from her IRA so that she has \$24,000 cash after paying the IRS 27% of the amount withdrawn. To the nearest dollar, how much does she need to withdraw?
- (2) Lynnette and David wish to save money for their new baby's college education. How much must they set aside each month in order to have enough money to send her to UTSA in 18 years? Assume that the total cost of attending UTSA is currently \$9,000 per year. Assume also that, for the next 18 years (a) the cost of attending UTSA will increase at an annual rate of 3%, and (b) the couple will invest their savings in an account that will pay 3.5% annual interest, compounded monthly.

(3) John has borrowed \$100,000 for a new house. What is the monthly payment required to repay the loan if the annual interest rate is 6%, compounded monthly, and the loan will be repaid in (a) 30 years or (b) 15 years? (Knowledge and skills required: setting up the problem and then summing a finite geometric series. Note. This problem has implications for students of all levels of achievement. While the most gifted students might be able to derive the monthly payment formula from scratch, most college algebra students do not have the mathematical maturity or skills to do so. Still, some of them could understand the teacher's derivation, and most of them could apply the formula successfully with the aid of a scientific calculator. Perhaps the most significant outcome is that virtually all of the students can search the Internet using the term, "amortization," and find a web site that they can use to answer the questions posed. In this way, without having to understand or even know the details of the formula, they become effective "users" of some very significant mathematics that impacts their lives.)

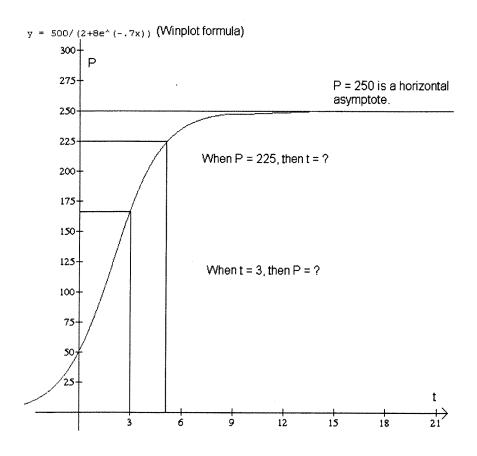
(4) A conservation organization releases 50 animals of an endangered species into a game preserve. Through experience, the organization estimates that the preserve can support about 250 animals and that the growth of the herd will be modeled by the logistics curve:

$$P(t) = \frac{250}{1 + 4e^{-0.7t}}$$
 (See graph below.)

Use the equation of the curve to show that (a) its graph contains the point (0, 50) and (b) its horizontal asymptote is P = 250.

According to the mathematical model's equation, what will be the approximate population of the herd in 3 years?

When does the model predict that the population will reach 225?



1. One yard of three-fourths inch iron pipe weighs 24 ounces. How	V
much will three-fifths of a mile of this pipe weigh? Give your answer	in
ounces and pounds.	

\*

- 2. Recall that the circumference of a circle is  $2\pi r$ , where r is the radius. In the following problems, use 3.14 for  $\pi$ .
  - (a) How much longer is a circle of radius 20 inches than a circle of radius 8 inches?
  - (b) How much longer is a circle of radius 30 inches than a circle of radius 18 inches?
  - (c) NASA has plans to build a wall around the equator of the Mars. If the wall is to be five feet high, how much longer will it be than the circumference of Mars? Assume that Mars's equator is a circle, but the radius is unknown.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

3. If P dollars is invested at interest rate r and the interest is compounded annually for n years, it will grow to an amount A, such that  $A = P(1+r)^n$ . If an investment of \$500 is to grow to \$875 in 7 years, then the interest rate must be greater than what percent? Give your answer to the nearest 0.01%.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

4. Consider the equation,  $y = -0.035x^2 + 2.98x - 6.14$ , where  $0 \le x \le 50$ . For what value of x is y equal to 20? Round your answer to the nearest 0.1.

\*

- 5. A new college has opened with an enrollment of 1,000 students. The campus is designed to accommodate 4000 students. The growth of the student body is modeled by the logistics curve  $p(t) = \frac{8000}{2 + 6e^{-0.17t}}$ 
  - (a) According to the model, what will the student population be in 3 years? Round your answer to the nearest whole number.
  - (b) According to the model, how long will it be before the student population reaches 3,000? Round your answer to the nearest 0.1.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

- 6. Suppose t and T are related by the equation,  $t = -4.8 \cdot \ln \frac{T 68}{98.2 68}$
- (a) Solve for t if T = 88.7. Round your answer to the nearest 0.1.
- - 8. A company has offered you a job selling computers. You can choose to be paid either (a) \$40,000 per year, plus 1.3% of your sales or (b) \$35,000 per year plus 1.8% of your sales. How much would your sales have to be in order for the two options to pay you the same amount of money? Round your answer to the nearest dollar.

9. A student can work as a hairdresser only 15 hours per week. The student will earn \$12 for each haircut and \$84 for each perm. Haircuts take 15 minutes while perms take an hour and 45 minutes. How many haircuts and how many perms will make the most money for the student?

\*

10. A box of chocolates with cashews costs \$4.00; a box with peanuts costs \$3.50. If you wish to spend \$57 on 15 boxes of these chocolates, how many of each should you buy?

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

11. Suppose you accept a job that has a starting salary of \$48,000. If you plan on working at this job for 30 years, and if your salary will increase 4% each year, what will be your total income for the 30-year period? Round your answer to the nearest dollar.

### **Solutions**

1. 
$$\frac{3}{5}mi \cdot \frac{5280 ft}{mi} \cdot \frac{1yd}{3 ft} = 1056 yd$$

$$1056 yd \cdot \frac{240z}{yd} = 25,3440z$$

$$25,3440z \cdot \frac{1lb}{160z} = 1584 lbs \text{ (Answer)}$$

- 2. Circumference of a circle:  $C = 2 \pi r$ 
  - (a)  $2\pi(20) 2\pi(8) = 40\pi 16\pi = 24\pi \approx 75.4$  in. (Answer)
  - (b)  $2\pi(30) 2\pi(18) = 60\pi 36\pi = 24\pi \approx 75.4$  in. (Answer)
  - (c) Let x represent the radius of Mars.

$$2\pi(x+5) - 2\pi x = 2\pi x + 10\pi - 2\pi x = 10\pi \approx 31.4$$
 ft. (Answer)

3. 
$$875 = 500 (1+r)^{7}$$

$$\frac{875}{500} = (1+r)^{7}$$

$$1.75 = (1+r)^{7}$$

$$1 + r = \sqrt[7]{1.75} = 1.75^{\frac{1}{7}} \approx 1.08322761$$

$$r = 0.08322761 \approx 8.32\%$$
(Answer)

4. 
$$y = -0.035x^{2} + 2.98x - 6.14 \text{ for } 0 \le x \le 50$$

$$20 = -0.035x^{2} + 2.98x - 6.14$$

$$0.035x^{2} - 2.98x + 6.14 + 20 = 0$$

$$0.035x^{2} - 2.98x + 26.14 = 0$$

$$x = \frac{-(-2.98) \pm \sqrt{(-2.98)^{2} - 4(0.035)(26.14)}}{2(0.035)}$$

$$x = \frac{2.98 \pm \sqrt{8.8804 - 3.6596}}{0.07}$$

$$x = \frac{2.98 \pm \sqrt{5.2208}}{0.07} = 75.2 \text{ or } 9.9. \text{ Because of the constraint,}$$

$$0 \le x \le 50 \text{, the only answer is } x = 9.9$$

5. 
$$p(t) = \frac{8000}{2 + 6e^{-0.17t}}$$
(a) 
$$p(3) = \frac{8000}{2 + 6e^{-0.17(3)}} = \frac{8000}{2 + 6e^{-0.51}} \approx 1427.81 \approx 1428 \text{ (Answer)}$$
(b) 
$$p(t) = 3000 \rightarrow 3000 = \frac{8000}{2 + 6e^{-0.17t}}$$

$$2 + 6e^{-0.17t} = \frac{8000}{3000} = \frac{8}{3} \approx 2.66666667$$

$$6e^{-0.17t} = 0.666666667$$

$$e^{-0.17t} = 0.111111111 \text{ (continued on the next page)}$$

$$\ln e^{-0.17t} = \ln 0.11111111$$

$$t = \frac{\ln 0.11111111}{-0.17} \approx \frac{-2.197224577}{-0.17} \approx 12.92485 \approx 12.9 \text{ years.}$$
(Answer)

6. (a)  $t = -4.8 \ln \frac{T - 68}{98.2 - 68}$ 
If  $T = 88.7$ , then
$$t = -4.8 \ln \frac{88.7 - 68}{98.2 - 68} = -4.8 \ln 0.6854304636 \approx 1.812999476 \approx 1.8$$
(b) If  $T = 92.5$ , then
$$t = -4.8 \ln \frac{92.5 - 68}{98.2 - 68} = -4.8 \ln 0.811258 \approx 1.004010273 \approx 1.0$$
(Answer)

7. 
$$8000(1.04)^{12} \approx 12,808.26 \approx 12,808. \text{ (Answer)}$$

8. 
$$\frac{\text{Amount of sales}}{x} \frac{\text{Salary (a)}}{40000 + 0.013x} \frac{\text{Salary (b)}}{35000 + 0.018x}$$
If salary (a) = salary (b), then
$$40000 + 0.013x = 35000 + 0.018x$$

$$40000 - 35000 = 0.018x - 0.013x$$
(Continued on the right)
$$x = \frac{5000}{0.005} = 1,000,000$$
(Answer)

9. 15 hours = 900 minutes. Each perm takes 105 minutes; each haircut takes 15 minutes. If P is the number of perms and H the number of haircuts that will be given, then the income is given by 84P + 12H.

P	Н	Income = 84P + 12H
8	4	720
7	11	720
6	18	720
5	25	720
4	32	720
3	39	720
2	46	720
1	53	720
0	60	720

Notice that increasing the perms by 1 reduces the number of haircuts by 7. Since one perm is worth the same income as 7 haircuts, namely \$84, the total income is unchanged. Hence, **there are 9 solutions**, as indicated in the table.

10. Let c be the number of boxes with cashews and p the number with peanuts.

$$\overline{(1) \ c + p = 15}$$

(2) 4c + 3.5p = 57

Multiply equation (1) by -4:

(3) 
$$-4c - 4p = -60$$

Add equations (2) and (3):

$$-0.5p = -3$$
  
 $p = -3/(-0.5) = 6$ 

Then c = 9

Check:

$$9 + 6 = 15$$

$$4(9) + 3.5(6) = 36 + 21 = 57.$$

Answer: 9 with cashews and 6 with peanuts.

11.	Year	Salary
	1	48000
	2	48000(1.04)
	3	$48000(1.04)^2$
	4	48000 (1.04) <sup>3</sup>
		•
	•	
	30	48000 (1.04) <sup>29</sup>

Let

$$S = 48000 + 48000(1.04) + 48000(1.04)^2 + ... + 48000(1.04)^{29}$$

Note that S is a geometric series with

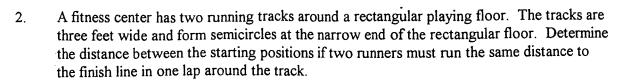
$$a_1 = 48000$$
,  $r = 1.04$ , and  $n = 30$ .

$$S = \frac{a_1(r^n - 1)}{r - 1}$$

$$S = \frac{48000(1.04^{30} - 1)}{1.04 - 1} = \frac{48000(2.24339751)}{0.04} = 2,692,077.01$$
(Answer)

Name	,	F	701061430	
1.	-	_ounces =	pounds	ATTACH THE SCRATCH!!!!!!!
2.		feet (round t	to two decimal places)	
3.	***************************************	_% (round to two d	lecimal places).	
4.		_ (round to one deci	imal place).	
5.	a	animals (ro	ound to nearest whole	number)
		years (roun	nd to one decimal place	e).
6.		_ estimated time of	death (round to neares	et minute).
7.	\$	(round to nearest	t penny).	
8.	More than:	\$		
9.		_haircuts and	permanents	
10.		_carnations and	roses. Equa	tion used to solve problem:
11.	\$			

One foot of one-eighth inch copper wire weighs four ounces. What is the weight of five-eighths mile of this tubing? (Note: one mile = 5,280 feet.)



3. If P dollars is invested at interest rate r compounded annually for five years, it will increase to an amount A, such that

$$A = P(1+r)^5$$

If an investment of \$1000 is to increase to an amount greater than \$1400 in five years, then the interest rate must be greater than what percentage?

4. The average age of the groom in a marriage for the given age if the bride can be approximated by the model:

$$y = -0.00428x^2 + 1.442x - 3.136$$
 where  $20 \le x \le 55$ 

Here, y is the age of the groom and x is the age of the bride. For what age of the bride is the average age of the groom 30?

5. A conservation organization releases 100 animals of an endangered species into a game preserve. The organization believes that the preserve has a carrying capacity of 1000 animals and that the growth of the herd will be modeled by the logistics curve

$$p(t) = \frac{1000}{1 + 9e^{-0.1656t}}$$

where t is measured in years.

- (a) Estimate the population after five years.
- (b) After how many years will the population be 500?
- 6. At 8:30 a.m., a coroner was called to the home of a person who had died during the night. In order to estimate the time of death, the coroner took the person's temperature twice. At. 9:00 a.m. the temperature was 85.7 degrees, and at 9:30 a.m. the temperature was 82.8 degrees. From these two temperatures the coroner was able to determine that the time elapsed since death and the body temperature were related by the formula:

$$t = -2.5 \ln \frac{T - 70}{98.6 - 70}$$

614

701061430

where t is the time in hours that has elapsed since the person died ant T is the temperature (in degrees Fahrenheit) of the person's body at 9:00 a.m. Assume that the person had a normal body temperature of 98.6 degrees at death, and that the room temperature was a constant 70 degrees. Use this formula to estimate the time of death of the person.

7. If the annual rate of inflation averages 5% over the next ten years, then the approximate cost C of goods or services during any year in that decade will be given by

$$C = P(1,05)^t$$

where t is the time in years and P is the present cost. If the price of a new tire for your car is presently \$69.95, estimate the price ten years from now.

- 8. You are offered two different jobs selling personal computers. One company offers an annual salary of \$22,500 plus a year-end bonus of 1.5% of your total sales. The other company offers a salary of \$20,000 plus a year-end bonus of 2% of your total sales. How much would you have to sell in order to make the second offer pay more than the first?
- 9. A student is working part-time as a cosmetologist to pay college expenses. The student may work no more than 21 hours per week. Haircuts cost \$17 and require an average of 20 minutes; permanents cost \$60 and require an average of 1 hour and 10 minutes. What combination of haircuts and perms will yield maximum revenue?
- 10. A florist wants to arrange a dozen flowers consisting of two varieties--carnations and roses. Carnations cost 75 cents each and roses are \$1.50 each. How many of each should the florist use in order for the arrangement to cost \$12.00?
- Suppose you accept a job that pays a salary of \$32,000 the first year, and that you will receive a 5.5% raise for each of the next 39 years. What will your total salary be over the 40-year period?



Name: \_\_\_\_\_

Numbers 1-2 are worth 5 points each. Numbers 3-11 are worth 10 points each.

- The distance from Earth to Pluto is approximately 3,570,000,000 miles. How long would it take a rocket, traveling at  $3.1 \times 10^3$  miles per hour, to reach Pluto?
- 2. Approximately 720,000 Americans die of a heart attack each year. Express this quantity in deaths by heart attack per day.
- 3. Your weight is 125 pounds, but the scale indicates it is 120 pounds. Find the absolute and relative errors.
- 4. Calculate the amount of interest you will have at the end of 4 years if you invest \$53,700 in an account that pays simple interest of 5%.
- 5. Kerry invests \$1500 in a savings account that earns 3.6% compounded quarterly. Use the compound interest formula for compounding more than once a year to determine the accumulated balance for Kerry after 5 years.
- 6. Suppose you are 28 years old and would like to retire at age 70. Furthermore, you would like to have a retirement fund from which you can draw an income of \$70,000 per year—forever! How can you do it? Assume a constant APR of 8%.
- 7. a. Calculate the monthly payment for a student loan of \$15,000 at a fixed APR of 6% for 5 years.
- b. Determine how much interest is paid after the total amount of the loan is paid off.
- 8. You need a mortgage loan for \$130,000.
- a. Compute the monthly payment for a 30-year loan at an APR of 6.9%.
- b. How much interest will you pay for the loan in part a?
- 9. The population of Happyville is increasing at a rate of 450 people per year.
- a. Is the growth linear or exponential?
- b. If the population is 7,850 today, what will it be in 5 years?
- 10. The value of your car is decreasing by 12% per year.
- a. Is the decay linear or exponential?
- b. If your car is worth \$9725 today, what will it be worth in two years?
- 11. A suburban town had an average growth rate of 1.4% from 1970-2000. In 2000, the population was 275,000.
- a. Find the approximate doubling time.
- b. Predict the population in 2040.

Name	FE	1	3	3	2

1. For each of the following numbers, check all that apply.

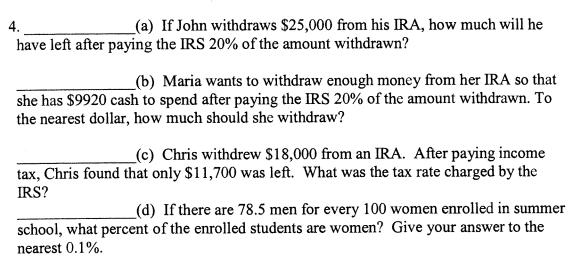
	Natural Number	Integer	Rational Number	Irrational Number	Real number	Not a real number
$-\frac{0}{3}$						
.24						
$\sqrt{-81}$						
<sup>3</sup> √−81						
10000000024						
12						
$7\sqrt{\pi^2}$						
$3.5\pi$						
$7-\sqrt{36}$						
$(-4)^{123456789}$						

2. If 12 pipe layers can lay 3 miles of pipe in 9 months, how many miles of pipe can 30 pipe layers lay in 3 years? How many pipe layers are required to lay 33 miles of pipe in 99 months? How long will it take 18 pipe layers to lay 18 miles of pipe?

Pipe layers	Miles of pipe	Time
12	3	9 months
30	?	3 years
?	33	99 months
18	18	?

### 3. Calculate the GPA for these grades.

Course	Credit hours attempted	Grade/Multiplier	Points earned
Arts 1316		A	
Psyc 2306		В	
Govt 2301		С	
Chem 1305		D	
Chem 1105		F	
Totals			
GPA	· =	=	· ≈



Name

# Calculate the z-scores for the above data set for the following grades

i	$x_i$	z-score:	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	Mean:
					$\bar{x} = \frac{\sum x_i}{n} =$
		$\frac{x_i - \bar{x}}{s}$			TL .
1	90				Median = middle value
2	85				Mode = most frequent value
3	85				Range = $high - low$ .
4	85				Standard deviation:
5	75				
6	75				$s = \sqrt{\sum \frac{(x_i - \bar{x})^2}{n - 1}} =$
7	70				,
8	65				
9	60				
	$\sum x_i =$			$\sum (x_i - \bar{x})^2 =$	

Name	3roup	Quiz
------	-------	------

First, calculate the sample mean, median, mode, range, and standard deviation for the following set of grades. Then calculate the *z*-score for each grade. Round to two decimal places.

<u> </u>	г.	Т			
Z-	i	$x_i$	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	n =
score:					
					Mean:
$x_i - \bar{x}$					$\bar{x} = \frac{\sum x_i}{n} =$
-					$x - \frac{1}{n} -$
S					
	1	100			Median = middle
	1	100			value =
					varac
					N. 1
	2	100			Mode = most frequent
					value =
	3	100			Range = $high - low =$
		100			
	1	00			
	4	90			G. 1 11
					Standard deviation:
	5	80			
	6	80			$s = \sqrt{\sum \frac{(x_i - \bar{x})^2}{n-1}} =$
	0	80			$\begin{vmatrix} 3-\\ \\ -1 \end{vmatrix}$
					<b>, v</b>
	7	70			
	8	65			
	9	53			-
	9	33			
					4
		$\sum x_i =$		$\sum (x_i - \bar{x})^2 =$	
		- '			
				<u> </u>	

Name	Individual Q	uiz

First, calculate the sample mean, median, mode, range, and standard deviation for the following set of grades. Then calculate the *z*-score for each grade. Round to two decimal places.

Z-	i	$ x_i $	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	n =
score:	•		$\lambda_{l}$		- Annual Control of the Control of t
					Mean:
$x_i - \bar{x}$					$\bar{x} = \frac{\sum x_i}{n} =$
S					n - n
	1	100			Median = middle
	1	100			value =
					value –
	2	100			Mode = most frequent
	2	100			value =
					Varue
	3	100			Range = $high - low =$
		100			
	4	90			
					Standard deviation:
	5	80			
					(20 00)2
	6	80			$s = \sqrt{\sum \frac{(x_i - \bar{x})^2}{n - 1}} =$
					$\sqrt{2}$ $n-1$
	7	70			
	8	60			
				$\sum (x_i - \bar{x})^2 =$	
		$\sum x_i =$			

Nam	e	

P and A are the sets of grades recorded for students who were then present (P) or absent (A) the day after the test.

$$P = (50, 80, 60, 55, 58, 90, 75, 95, 33, 65, 58, 75, 28, 90)$$

$$A = (25, 65, 80, 60, 35, 10, 40, 38, 70, 30)$$

 $P \cup A =$  all of the above scores in one data set.

Find the mean, standard deviation, and range for the sets P, A, and  $P \cup A$ 

	Mean	Standard deviation	Range
A			
P			
P∪A			

On a separate sheet, answer the following questions as completely as you can.

- 1. Do you think that the difference in the mean of groups A and P is significant?
- 2. Do you think that the difference in the means caused, at least partially, the students to be present or absent the day after the test, or do you think that the fact that they were present or absent caused the difference in the means, or do you think that something else caused both?
- 3. Calculate the z-scores for the data set  $P \cup A$  for the following grades:

Grade	90	80	70	60	40	30	10
z-score							

## Take Home Test

Name	
Name	

1. Scores for the combined SAT-1 (math and verbal) have a mean of 1017 and a standard deviation of 20. What is the probability that a student would score over 1058?

- 2. IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.
  - a. What percentage of the population would you expect to have scores less than 75?
  - b. If a sample of 9 students were selected, what would be the probability that their mean score would be less that 75?

If 1 kg weighs 2.2 lbs, 13.

A. \_\_\_\_\_How many pounds does a 2 kg bag of sugar weigh?

B. \_\_\_\_\_How many kg does a 60 lb bag of cement weigh?

If 1 liter equals 1.057 quarts, how many liters are equal to 1 14. quart? Round to three decimal places.

If one inch equals 2.54 cm, how many yards are in 10 meters? 15.

16. Consider the following data and fill in the blanks:

Z-score I  $X_{i}$ 

 $X_i - \overline{X}$   $(X_i - \overline{X})^2$ 

n =

90 1

mean =

2 80 median =

3 70 mode =

4 70 Range =\_\_\_\_\_

5 60

$$\sum_{i=1}^{n} (X_i - \overline{X})^2 = \underline{\hspace{1cm}}$$

17.

The heights of 2,000 men in a survey were found to be normally distributed with a mean of 68.5 inches and a standard deviation of 2.5 inches. What percentage of these men have heights of 6 feet or greater?

18.  $57_{10} =$ \_\_\_\_\_\_\_

19.

How many different five-card poker hands are possible from a standard 52-card deck?

20. A card is drawn at random from a standard 52-card deck. What is the probability that it is

not an ace?

not red?

- To what amount will \$1000 grow at 6% interest compounded continuously for one year?
- A 6-foot tall man casts an 18-foot shadow. A nearby building's shadow is 330 feet. How tall is the building?
- 23. Consider the series: 2 + 4 + 8 + 16 + ... + 256

What kind of series is this?

How many terms are there?

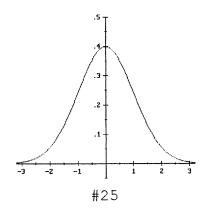
A recursive formula is:  $a_1 =$ 

 $a_n = \underline{\hspace{1cm}}$ 

An explicit formula is:  $a_n = \underline{\hspace{1cm}}$ 

\_\_\_\_\_What is the sum of the series?

24. \_\_\_\_\_ LITE bread has one-third less calories than regular bread. How many slices of LITE contain the calories of two slices of regular?



25. Find z if P(-z < Z < z) = 0.832 and shade the appropriate area under the curve.

Following are the results of a recent survey: 1.

A. 25% of those surveyed said they will vote for Smith.

B. 15% of those surveyed said they will vote for Gonzales.

C. 45% of those surveyed said they will vote for Gonzalez.

D. The other 39 people said they are undecided.

How many people were surveyed?

If 18 soldiers can dig 12 foxholes in 10 hours, how many soldiers are needed 2. to dig 3600 foxholes in 5 hours?

If 1 kg weighs 2.2 lbs, 3.

A. \_\_\_\_\_How many pounds does a 100 kg man weigh?

B. \_\_\_\_\_How many kg does a 200 lb canary weigh?

If 1 liter equals 1.057 quarts, how many quarts and ounces are equal to 3 4. liters? Round to the nearest ounce.

If one inch equals 2.54 cm, how many meters are in one mile? 5.

6. Consider the following data:

 $\overline{X} = X_i - \overline{X} \qquad (X_i - \overline{X})^2 \qquad n = \underline{\hspace{1cm}}$ i X,

50 1

mean =\_\_\_\_

2 50 median =

3 40 mode =

4 30 Range =

5 20

Name	•	Quiz	1	33	32

1. For each of the following numbers, check all that apply.

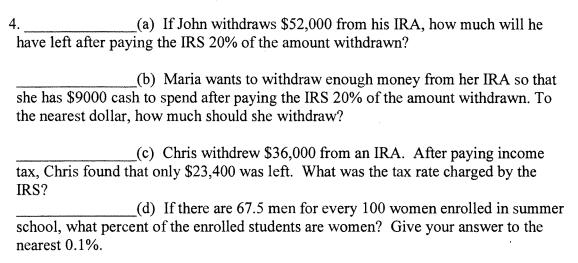
	Natural Number	Integer	Rational Number	Irrational Number	Real number	Not a real number
$-\frac{1001000001}{3}$				·		
.75		,				
√-49						
3√-49						
$\frac{10000000042}{12}$						
$3\sqrt{\pi^2}$						
$0.5\pi$						
$7-\sqrt{2}$						
$(-4)^{12}$					,	

2. If 12 pipe layers can lay 3 miles of pipe in 9 months, how many miles of pipe can 36 pipe layers lay in 30 months? How many pipe layers are required to lay 24 miles of pipe in 5 months? How long will it take 15 pipe layers to lay 5 miles of pipe?

Pipe layers	Miles of pipe	Time
12	43	9 19 months
36	?	30 months
?	24	5 months
15	5	?

### 3. Calculate the GPA for these grades.

Course	Credit hours attempted	Grade/Multiplier	Points earned
Arts 1316		В	
Psyc 2306		Α	
Govt 2301		С	
Chem 1305		С	
Chem 1105		D	
Totals			
GP <i>A</i>	<b>\</b> =	=	. ≈



Name	FE	1332
	. —	

1. For each of the following numbers, check all that apply.

	Natural Number	Integer	Rational Number	Irrational Number	Real number	Not a real number
$-\frac{0}{3}$						
.24						
$\sqrt{-81}$						
<sup>3</sup> √−81						
1000000024						
12						
$\frac{7\sqrt{\pi^2}}{3.5\pi}$						
$3.5\pi$						
$7 - \sqrt{36}$						
$(-4)^{123456789}$						,

2. If 12 pipe layers can lay 3 miles of pipe in 9 months, how many miles of pipe can 30 pipe layers lay in 3 years? How many pipe layers are required to lay 33 miles of pipe in 99 months? How long will it take 18 pipe layers to lay 18 miles of pipe?

Pipe layers	Miles of pipe Time	
12	3	9 months
30	?	3 years
		6.
?	33	99 months
18	18	?
10	10	<b>.</b>

3. Calculate the GPA for these grades.

Course	Credit hours attempted	Grade/Multiplier	Points earned
Arts 1316		Α	
Psyc 2306		В	
Govt 2301		С	
Chem 1305		D	
Chem 1105		F	
Totals			
GPA	=	=	≈

