

Regina Lewis

From: Art_Shaw@URSCorp.com
Sent: Wednesday, October 26, 2005 12:04 PM
To: Regina Lewis
Subject: RE: Academy Cadet Program, Pruden Center

Regina,

Each month I plan to put out a reminder to the instructors who are scheduled to teach at the Pruden Center that month. For November 2005 the instructors are both coming from the Pruden Center. Ken Southard is scheduled to teach the morning session on Heavy Equipment and your math teacher is scheduled to teach Math Review in the afternoon session.

If your math teacher needs any suggestions on the content of her course, here's a few:

1. Measuring volumes of structures that may have even or uneven dimensions, e.g., sections of asphalt or concrete pavement, concrete foundations, cross-sections of drainage ditches/channels, excavation quantities, etc. and then converting these volumes to weights. As an example: if you've calculated the volume of a concrete foundation in cubic feet, and you know that concrete weighs 150 lbs per cubic foot, how do you convert cubic feet to cubic yards for ordering the concrete and then to tons or lbs for checking the strength of your forms .
2. Understanding unit prices, e.g., \$/cubic yard of concrete, \$/lineal foot of drainage pipe, \$/ton of asphalt, etc.
3. Knowing the difference between an Engineer's Scale and an Architect's Scale and when to use them
4. Understanding slopes. Embankments are frequently stated in terms of vertical to horizontal measurement (1/3 - one foot vert to 3 feet horiz) Pipe and ditch slopes are frequently stated in terms of percentage (the slope of the bottom, or invert, of a ditch or pipe is frequently stated in terms of a very small percentage)

Ken can provide more ideas.

Thanks,
Art

This e-mail and any attachments are confidential. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

"Regina Lewis"
<reglewis@spsk12.net>

09/12/2005 11:44
AM

<Art_Shaw@URSCorp.com>

To

cc

Subject

MATH REVIEW

Objective:

This session is intended to serve as a refresher, and to sharpen the prospective employee's knowledge and confidence in the use of basic math skills used in the maintenance and construction industry. (8 hours)

- I Introduction of Instructor
- II Importance of Math
 - A. Basic knowledge – What the data is used for?
 - B. Accuracy/double checking
- III Basic Review of Principles
 - A. Addition/subtraction
 - B. Multiplication
 - C. Division
 - D. Fractions
 - E. Decimals
- IV Use of Calculator
- V Calculating Values of Common Public Works Needs
 - A. Perimeter
 - B. Diameter
 - C. Circumference
 - D. Area – handout
 - E. Volume – handout
 - F. Cut and fill volumes
- VI Note Taking/Keeping Records
- VII Review
 - A. Questions and Answers
 - B. Written Test



TIDEWATER COMMUNITY COLLEGE

**The Public Works Academy
in partnership with
Tidewater Community College & Mary Greer Landon
presents
Basic Math Skills for the Workplace**

Spring 2003



Whole Numbers

The standard system of numbering is called the **decimal** system and uses ten **digits**: 0,1,2,3,4,5,6,7,8,9. The starting point is the **decimal point** (.).

Whole numbers are the digits to **left** of the decimal point.

Whole Numbers										
Millions				Thousands			Ones			Decimal Point
Billions	Hundred Millions	Ten Millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones (units)	
8	3	2	1	4	5	6	7	9	5	.

This number 8,321,456,795 is read

"eight billion, three hundred twenty-one million, four hundred fifty-six thousand, seven hundred ninety-five."

Rounding whole numbers:

- Locate the place to which the number is to be rounded.
- If the first digit to the right of it is 5 or more, increase the digit by one.
- If the first digit to the right of it is 4 or less, do not change the digit.
- All digits to the right of the rounded number are then considered zeros.

Exercise

Round each number:

- (a) 368 to the nearest ten _____
- (b) 67,433 to the nearest thousand _____
- (c) 1,498,985 to the nearest million _____

Rounding helps you estimate answers quickly.

Exact	Estimate	Exact	Estimate	Exact	Estimate
8 2 1 5		2 6 8 5		7 8 3	
	5 6		7 3	-2 3 8	
	7 2 9		5 9 2		
+3 6 0 5		+7 1 8 3			

Basics of Decimals

Decimal Place Values						
Decimal Point	Tenths	Hundredths	Thousandths	Ten-thousandths	Hundred-thousandths	Millionths
.	0	3				

This number is read "three hundredths"

Whole Numbers and Decimals										
Thousands			Ones			Decimal Point	Decimals			
Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones (units)		Tenths	Hundredths	Thousandths	Ten-thousandths
					1	9	.	0	8	

The word "and" is used to separate a whole number and a decimal.

The above number is read "**Nineteen and eight hundredths**"

0.097 ninety-seven thousandths

7648.9713 seven thousand, six hundred forty-eight and nine thousand, seven hundred thirteen ten thousandths

98.5892

Rounding Decimals

- Find the place to which you are rounding the number.
- Look only at the first digit you are cutting off. If that digit is 5 or more, increase by one the digit in the place to which you are rounding.
- If the first digit you are cutting off is 4 or less, do not change the digit in the place to which you are rounding.
- Drop all digits to the right of the place to which you have rounded.

98.5892 Round to the tenth digit
The tenth digit is _____
Look at the first digit to the right of that. _____
Is it more than 5? _____
If yes, round up.
If no, stay the same.
What is your rounded number? _____

24.6483 to the nearest thousandth is _____

24.6483 to the nearest hundredth is _____

24.6483 to the nearest tenth is _____

Now to the important stuff . . .

Round to the nearest dollar:

\$48.69 _____ \$594.36 _____

\$2,689.50 _____ \$.61 _____

Class Exercise

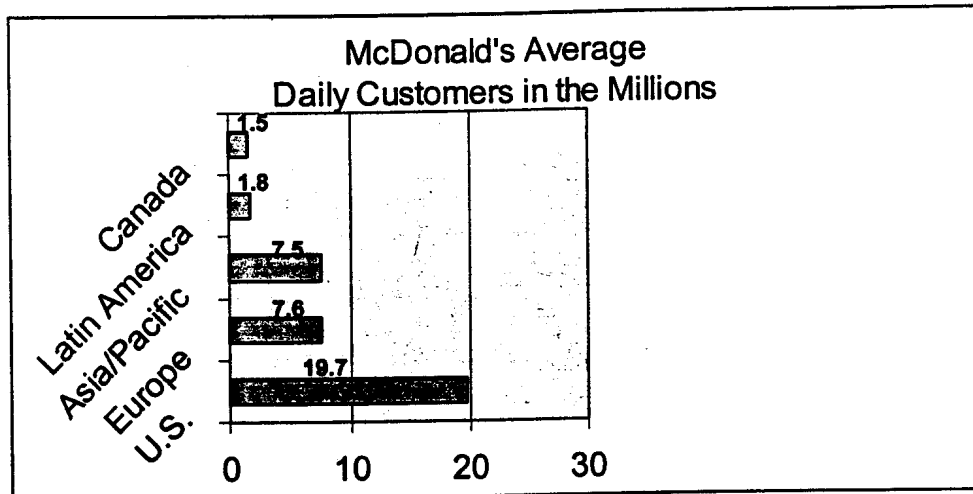
Exact change in your pocket _____ Average to the nearest dollar _____

Total exact change in your group _____

Average total to the nearest dollar _____

Estimate the following answers to the nearest dollar:

\$19.74	_____	\$35.86	_____	\$371.82	_____
- 6.58	_____	+7.91	_____	512.50	_____
_____	_____	_____	_____	_____	_____



The above graph shows the average daily customer visits (in millions) to McDonald's around the world.

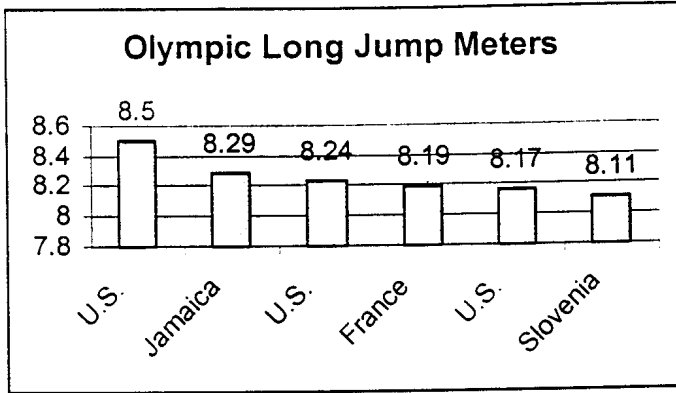
If McDonald's is open 364 days a year find the total number of customer visits in one year in the United States.

What is a quick way of estimating this answer?

Find the gross pay for each worker at the rates given below. Round to the nearest dollar.

28.6 hours at \$7.25 per hour

33.4 hours at \$8.35 per hour



Finding Averages

- Add the numbers for each together.
- Divide by the number of items added

What will you use this for?

Find the average length of all the long jumps.

Find the average length of the long jumps made by U.S. athletes.

1 meter = 3.28 feet. Convert the average length of the U.S. long jumps to feet.

Barry bought 16.5 meters of rope at \$.48 per meter.

How much did he pay? _____

How many feet of rope does he have? _____

John bought three meters of wire at \$1.05 per meter.

How much did he pay? _____

How many feet of wire does he have? _____

Roofing material costs \$54.52 per square (10 ft. x 10 ft.)

Cost is:

\$35.75 per square for labor

3.65 per square for costs

What is the total cost for 26.3 squares of installed roof?

Decimal Equivalents:

$$\frac{1}{16} = .0625$$

$$\frac{1}{9} = .1111$$

$$\frac{1}{8} = .125$$

$$\frac{1}{7} = .1429$$

$$\frac{1}{6} = .1667$$

$$\frac{3}{16} = .1875$$

$$\frac{1}{5} = .2$$

$$\frac{1}{4} = .25$$

$$\frac{5}{16} = .3125$$

$$\frac{1}{3} = .3333$$

$$\frac{3}{8} = .375$$

$$\frac{7}{16} = .4375$$

$$\frac{1}{2} = .5$$

$$\frac{9}{16} = .5625$$

$$\frac{5}{8} = .625$$

$$\frac{2}{3} = .6667$$

$$\frac{11}{16} = .6875$$

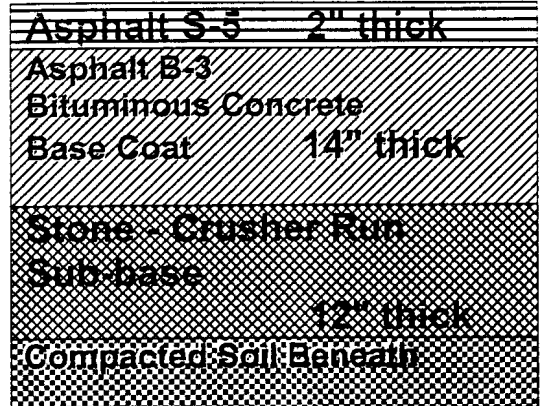
$$\frac{3}{4} = .75$$

$$\frac{13}{16} = .8125$$

$$\frac{5}{6} = .8333$$

$$\frac{7}{8} = .875$$

What do you use fractions for?



Asphalt - S-5 Bituminous concrete - surface coat	2" thick
Asphalt - B-3 Bituminous concrete - Base Coat	14" thick
Stone - Crusher run - sub-base	12" thick
Compacted Soil Beneath	

Asphalt and aggregate - 1.8 tons = 1 cubic yard

1 mile = 1,760 yards or 5,280 feet

How much asphalt (S-5 + B-3) will be delivered for a road that is 1 mile long and 30 feet wide?

How much S-5 asphalt for a road that is 3 miles long, 30 feet wide?

How much B-3 asphalt for 6 miles long, 24 feet wide?

How much asphalt (S-5 + B-3) for 1/2 mile long, 30 feet wide?

How much B-3 asphalt for one half mile long, 24 feet wide?

Base stone - 1.8 tons / cubic yard

How much crushed run stone needs to be delivered for a project that is 5 yards wide, 5 yards long, and 12" deep?

How much stone needs to be delivered for a project that is 25 yards long, 3 yards wide, and 1 foot deep?

How much stone should be delivered to fill a trench that is 5 yards long, 3 yards wide, and 1/3 yard deep?

How much stone is needed to fill land that is 17 yards long, 5 yards wide and 1 foot deep?

How much stone will be delivered for 4 yards long, 4 yards wide, and 12 inches deep?

Concrete - 2.0 tons = cubic yard

How much concrete is needed for a sidewalk that is 2 yards wide, and a block that is 1/2 mile long, and 6" thick?

How much concrete is needed for the front entrance of a building? It is square and measures 23 yards wide and 23 yards long, and needs to be 9 inches thick?

How much concrete needs to be ordered for a 10 yard long driveway that needs to be 4 yards wide and 10 inches thick?

How much concrete is needed to pave property that is 3 yards wide, 3 yards long, and 8 inches thick?

Fraction and Percent Equivalents

What do you use these for?

$$\frac{1}{100} = 1\%$$

$$\frac{1}{9} = 11\frac{1}{9}\%$$

$$\frac{1}{3} = 33\frac{1}{3}\%$$

$$\frac{4}{5} = 80\%$$

$$\frac{1}{50} = 2\%$$

$$\frac{1}{8} = 12\frac{1}{2}\%$$

$$\frac{3}{8} = 37\frac{1}{2}\%$$

$$\frac{5}{6} = 83\frac{1}{3}\%$$

$$\frac{1}{25} = 4\%$$

$$\frac{1}{7} = 14\frac{2}{7}\%$$

$$\frac{2}{5} = 40\%$$

$$\frac{7}{8} = 87\frac{1}{2}\%$$

$$\frac{1}{20} = 5\%$$

$$\frac{1}{6} = 16\frac{2}{3}\%$$

$$\frac{1}{2} = 50\%$$

$$1 = 100\%$$

$$\frac{1}{16} = 6\frac{1}{4}\%$$

$$\frac{3}{16} = 18\frac{3}{4}\%$$

$$\frac{3}{5} = 60\%$$

$$1\frac{1}{4} = 125\%$$

$$\frac{1}{12} = 8\frac{1}{3}\%$$

$$\frac{1}{5} = 20\%$$

$$\frac{5}{8} = 62\frac{1}{2}\%$$

$$1\frac{1}{2} = 150\%$$

$$\frac{1}{10} = 10\%$$

$$\frac{1}{4} = 25\%$$

$$\frac{2}{3} = 66\frac{2}{3}\%$$

$$1\frac{3}{4} = 175\%$$

$$\frac{3}{4} = 75\%$$

$$2 = 200\%$$

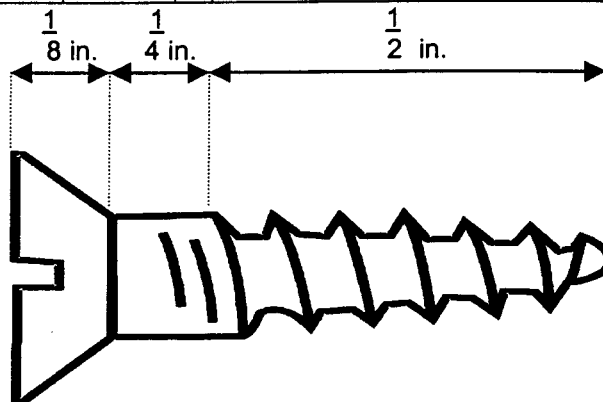
The metric system is based on a decimal system (ie: powers of ten). Therefore, it simplifies calculations by using a set of prefixes shown in the table below.

Metric and U.S. Equivalents

1 cable's length	120 fathoms 720 feet 219.456 meters	1 league (land)	3 statute miles 4.828 kilometers
1 centimeter	0.3937 inch	1 meter	39.37 inches 1.094 yards
1 decimeter	3.937 inches	1 mile (statute or land)	5,280 feet 1,760 yards 1.609 kilometers
1 dekameter	32.808 feet	1 millimeter	0.03937 inch
1 fathom	6 feet 1.8288 meters	1 yard	0.9144 meter
1 foot	0.3048 meter		
1 inch	2.54 centimeters		
1 kilometer	0.621 mile		

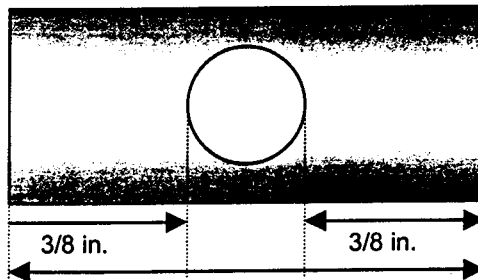
Bolts and Screws: Conversion from Fractions of an Inch to Millimeters

Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/64	0.40	13/64	5.16	25/64	9.92	37/64	14.69	51/64	20.24
1/32	0.79	7/32	5.56	13/32	10.32	19/32	15.08	13/16	20.64
3/64	1.19	15/64	5.95	27/64	10.72	39/64	15.48	53/64	21.03
1/16	1.59	1/4	6.35	7/16	11.11	5/8	15.88	27/32	21.43
5/64	1.98	17/64	6.75	29/64	11.51	41/64	16.27	55/64	21.83
3/32	2.38	9/32	7.14	15/32	11.91	21/32	16.67	7/8	22.23
7/64	2.78	19/64	7.54	31/64	12.30	43/64	17.06	57/64	22.62
1/8	3.18	5/16	7.94	1/2	12.70	11/16	17.46	29/32	23.02
9/64	3.57	21/64	8.33	33/64	13.10	45/64	17.86	59/64	23.42
5/32	3.97	11/32	8.73	17/32	13.50	23/32	18.26	15/16	23.81
11/64	4.37	23/64	9.13	35/64	13.90	47/64	18.65	61/64	24.21
3/16	4.76	3/8	9.53	9/16	14.29	3/4	19.05	31/32	24.61
						49/64	19.45	63/64	25.00
						25/32	19.84	1	25.40



What is the total length of this screw in inches? _____

What is the total length of this screw in millimeters? _____



$\frac{15}{16}$ in.

What is the diameter of the hole in the bracket in inches? _____

What is the diameter of the hole in the bracket in millimeters? _____

Other uses for fractions and decimals.

A hydraulic jack contains $\frac{7}{8}$ gallon of hydraulic fluid. A cracked seal resulted in a loss of $\frac{1}{6}$ gallon of fluid in the morning and another $\frac{1}{3}$ gallon in the afternoon.

What is the amount of fluid remaining? _____

What is the percentage of fluid remaining? _____

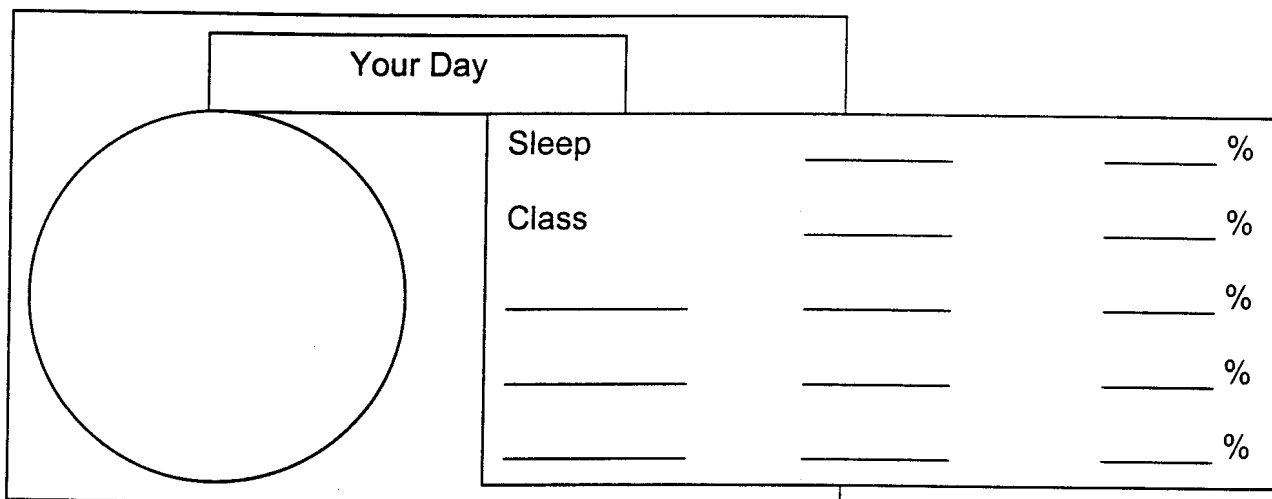
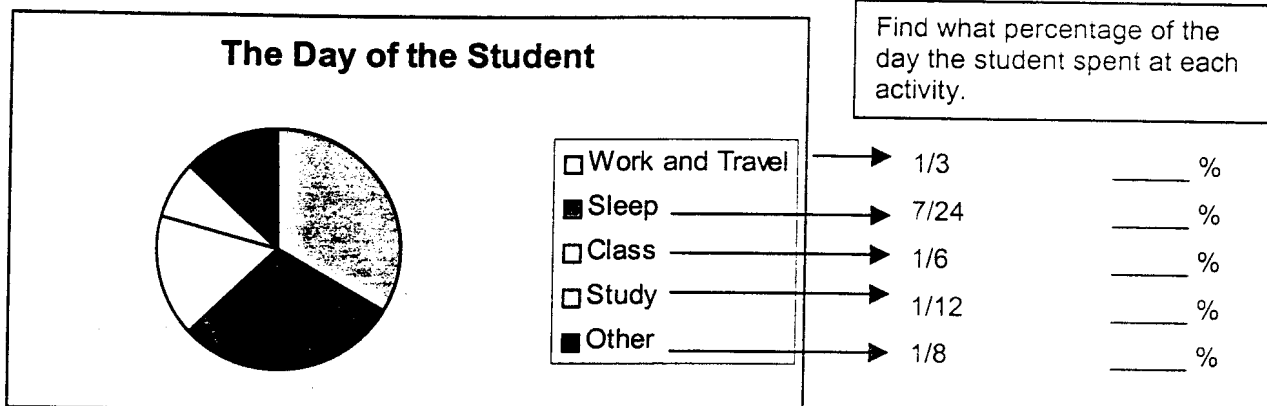
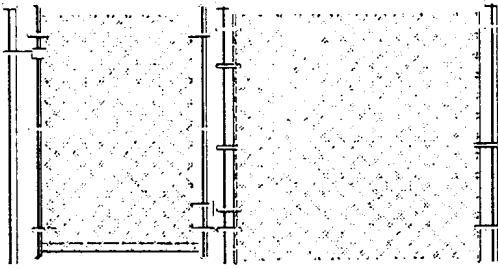


Figure out your graph for today's activities.

Mark in the fraction of the day based on the number of hours/minutes spent in each activity.

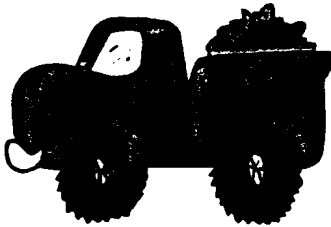
Convert the fraction to a decimal and divide up your circle graph as closely as you can.

What are you spending most of your day doing? _____

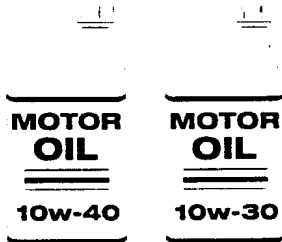


A hazardous waste dump site will require $\frac{7}{8}$ mile of security fencing. The site has four sides with three of the sides measuring $\frac{1}{4}$ mile, $\frac{1}{6}$ mile, and $\frac{3}{8}$ mile. Find the length of the fourth side.

The exercise yard at the correction center has four sides and is enclosed with $527 \frac{1}{24}$ feet of security fencing around it. If three sides of the yard measure $107 \frac{2}{3}$ feet, $150 \frac{3}{4}$ feet, and $138 \frac{5}{8}$ feet, find the length of the fourth side.



A landscaper has a truck loaded with $9 \frac{1}{58}$ cubic yards of peat moss. The driver unloads $1 \frac{1}{2}$ cubic yards at the first stop and $2 \frac{3}{4}$ cubic yards at the second stop. At a third stop, the driver delivers $3 \frac{5}{12}$ cubic yards. How much peat moss is left in the truck?



The Auto Supply department gave out $16 \frac{1}{2}$ cases of generic motor oil last week, $12 \frac{1}{8}$ cases of Havoline oil, $8 \frac{3}{4}$ cases of Valvoline oil,, and $12 \frac{5}{8}$ cases of Castrol oil. Find the total number of cases of oil that were delivered during the last week.

If you work $38 \frac{1}{4}$ hours for \$8.25 per hour, how much will you earn for that week?

For 1 acre of a field, $7 \frac{1}{2}$ gallons of fertilizer must be applied. How many acres can be fertilized with 1200 gallons of fertilizer?

An insect spray manufactured by Dutch Chemicals is a mix of $1 \frac{3}{4}$ ounces of chemical per gallon of water.
How many ounces of chemical are needed for $12 \frac{1}{2}$ gallons of water?

A small pickup truck will carry $\frac{2}{3}$ cord of firewood.
Find the number of trips you will have to make to deliver 40 cords of wood.

You have a 200 yard roll of weather stripping material. How many pieces of weather stripping $\frac{5}{8}$ yard in length may be cut from the roll?

You have $147 \frac{1}{2}$ gallons of exterior paint. If you and your crew sprayed $68 \frac{1}{2}$ gallons on the large side surfaces, rolled $37 \frac{3}{8}$ gallons on the masonry exterior, and brushed $5 \frac{3}{4}$ gallons on the trim, how much paint is left over?

Taking fractions ($\frac{1}{2}$) to decimals (.50) and then to percents (50%)

To take a fraction to a decimal or a percent, you must divide the top number by the bottom number.

$$\frac{2}{5} = 2 \div 5 = 0.4 = 40\%$$

Let's practice:

$$\frac{5}{8} = 0. \underline{\quad} = \underline{\quad} \%$$

$$\frac{1}{8} = 0. \underline{\quad} = \underline{\quad} \%$$

$$\frac{3}{4} =$$

$$\frac{7}{20} =$$

$$\frac{7}{8} =$$

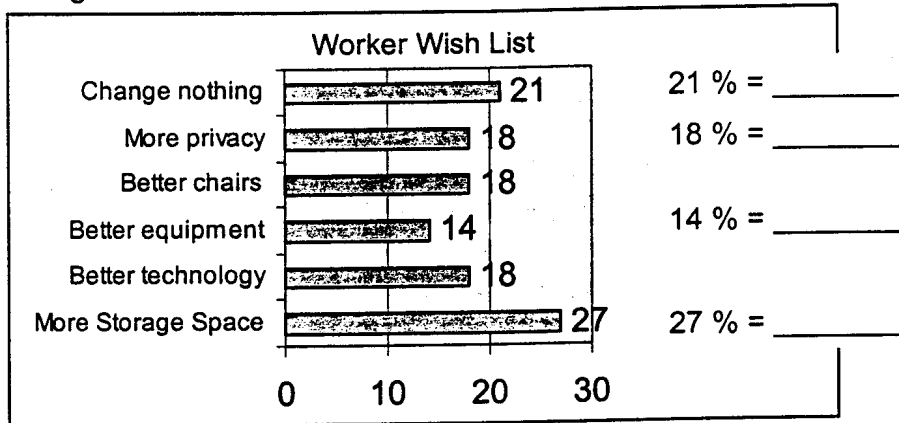
$$\frac{3}{5} =$$

Using decimals and percentages (Percentages must be changed to decimals in order to multiply, add, subtract, or divide.)

Let's apply percentages to buying houses. How much commission will you pay a realtor who charges 6% for finding a house that you like for \$75,000?

Percentages of office workers that wish for changes in their work area that would increase their productivity.

There are 14 million office workers. Find out how many want each of these changes.



Let's make our own chart.

What do you want in your workplace in order to work more efficiently and professionally?

Narrow the list down to 5 items / how many of you want each of these items?

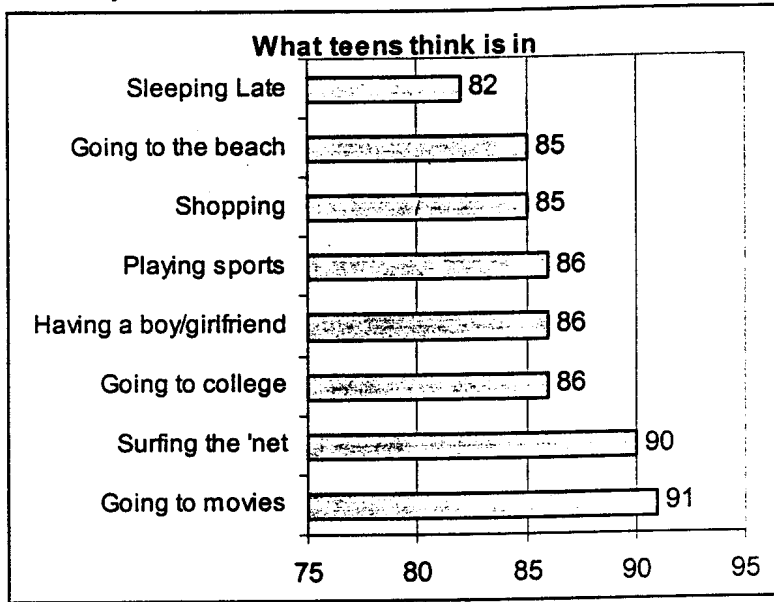
How many are in this class? _____

- | | | | | | |
|---------|--------------------------|-------|-------|-------|---|
| Item #1 | How many want this item? | _____ | _____ | _____ | % |
| Item #2 | How many want this item? | _____ | _____ | _____ | % |
| Item #3 | How many want this item? | _____ | _____ | _____ | % |
| Item #4 | How many want this item? | _____ | _____ | _____ | % |
| Item #5 | How many want this item? | _____ | _____ | _____ | % |

Make a fraction out of the number that want the item over the total number in class.

Divide the top number by the bottom number to find the decimal equivalent.
Express it as a percentage.

A survey of 2008 teens rated what they thought was 'in'.



What is 'in'	How many of the 2008 thought so
Sleeping late	
Going to the beach	
Shopping	
Playing sports	
Having a boy/girlfriend	
Going to college	
Surfing the internet	
Going to the movies	

Remember to change your percentage to a decimal and multiply.
Then record the number as an estimate rounded to the nearest whole number.

For example :

If 26% thought working at the grocery store was in, you would do the following math:

$$2008 \times .26 = 522.08 \quad \text{Round to the nearest whole number} \quad \underline{522}$$

What are some things YOU think are in?

Item #1	Movies	How Many?	_____	Percentage of the class?	_____
Item #2					
Item #3					

In the United States there are 132 million people in the work force.
 If 54% of the workforce is male, how many are male? _____

What percentage of the workforce is female? _____

The average cost of one minute of advertising during the Super Bowl in 1999 was \$2.4 million. If the increase in cost in 2000 was 8.3% what was the average cost of one minute of Super Bowl advertising in the year 2000?
 (Round to the nearest tenth of a million.) _____

A survey at an intersection found that of 2200 drivers, 38% were wearing seat belts. How many drivers in the survey were wearing seatbelts? _____

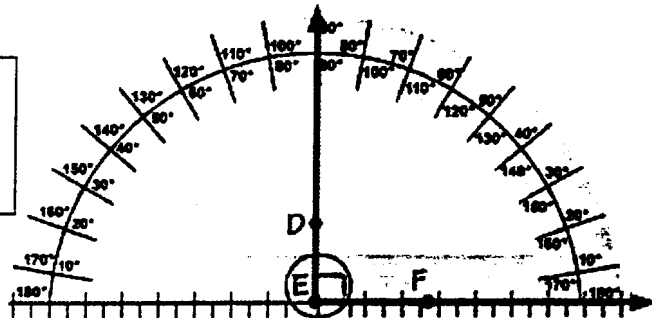
Angles, etc.

A geometrical figure with three or more sides is called a polygon or a polyhedron. Here are the names for some polygons.

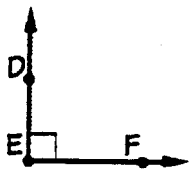
- 3 triangle
- 4 quadrilateral
- 5 pentagon
- 6 hexagon
- 7 heptagon
- 8 octagon
- 9 nonagon
- 10 decagon

What do you use angles for?

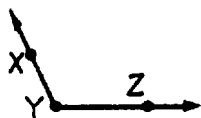
A Protractor Measures Angles



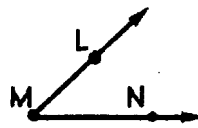
right angle measures 90°



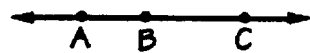
Right Angle = _____



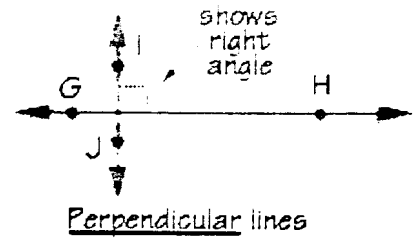
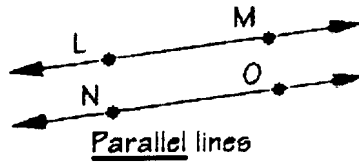
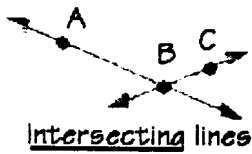
Obtuse Angle
 More than _____



Acute Angle
 Less than _____

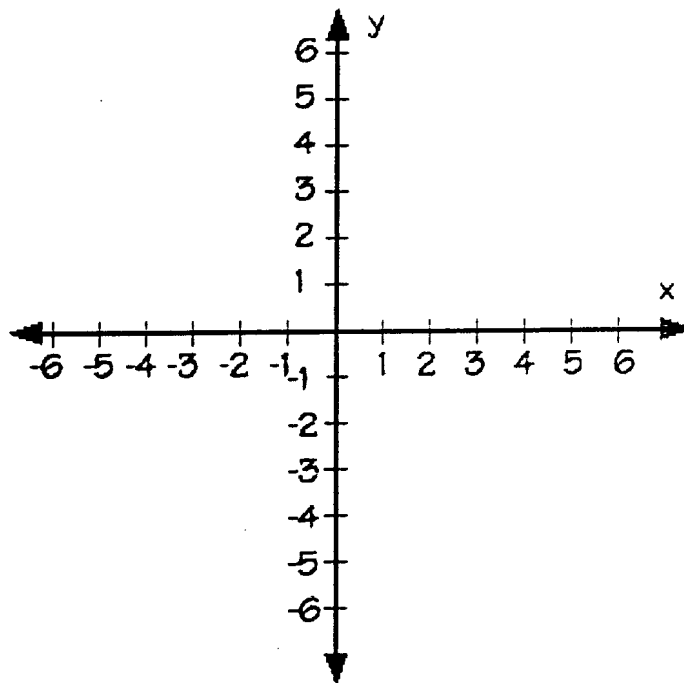
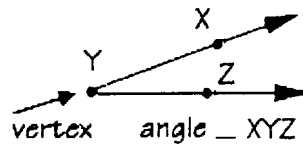


Straight Angle = _____

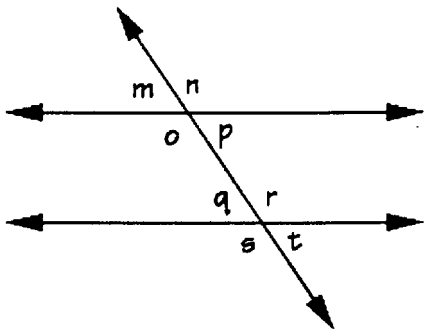


Lines and Angles can be plotted on a graph

Draw a dot labeled B on the location that is +2 (on the y axis) and -2 (on the x axis)
 Draw a dot labeled C on the locations that is +2 (on the x axis) and -2 (on the y axis)
 Connect the dots with a line. Now extend each line out with an arrow at the end of each line.



Place a dot labeled K on +3 (y axis) +2 (x axis)
 Place a dot labeled J on +5 (y axis) +3.5 (x axis)
 Place a dot labeled L on +3.5 (y axis) +4.5 (x axis)
 Connect K and J
 Connect K and L
 You have plotted what type of an angle? _____

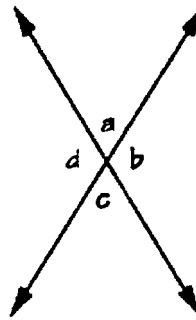


corresponding pair

- $\angle m$ and $\angle q$
- $\angle n$ and $\angle r$
- $\angle o$ and $\angle s$
- $\angle p$ and $\angle t$

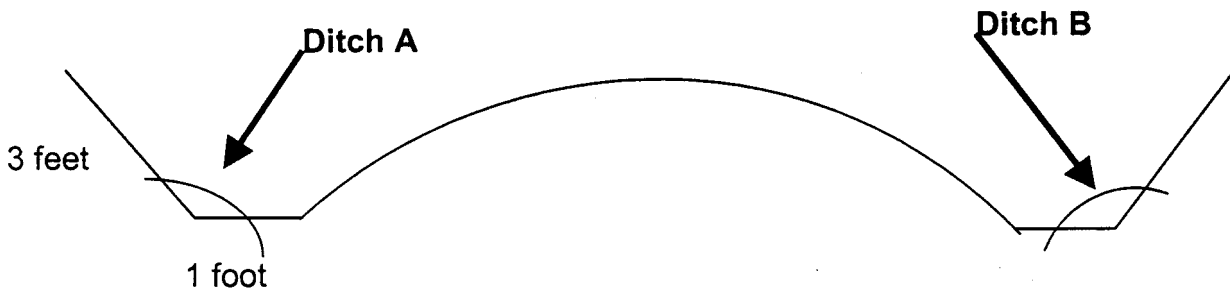
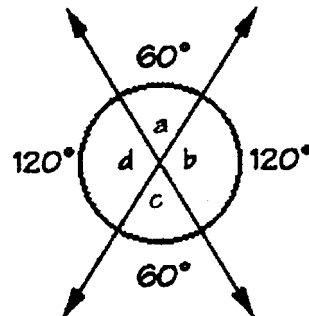
adjacent pair

- $\angle a$ and $\angle d$
- $\angle a$ and $\angle b$
- $\angle b$ and $\angle c$
- $\angle d$ and $\angle c$



vertical pair

- $\angle a$ and $\angle c$
- $\angle d$ and $\angle b$



The angle on Ditch A is 105 degrees. What is the angle on Ditch B if it is a corresponding angle? _____

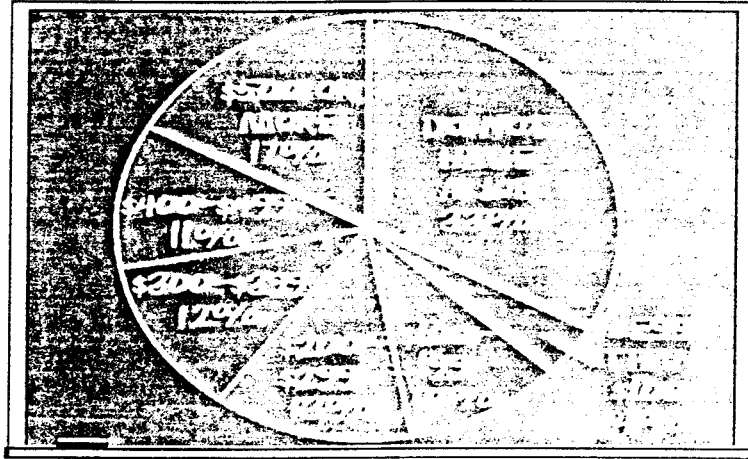


REAL-WORLD NUMBERS

INFORMATION FROM THE WORLD AROUND US

They Earn It...

Two thirds of college students have a job with average monthly earnings of:



DATA: CAMPUS CONCEPTS

Managing your money math

How many have a checking account? _____ out of _____

What % is that? _____

Parts of a Check

Write clearly in ink the name of the person or place receiving the check (payee).

Bank and Federal Reserve district number 12-045 / 6789

Check number 58

Correctly date each check. April 10, 20

Write the amount of the check close to the dollar sign so additional digits cannot be added. \$159 ⁹⁰/₁₀₀

Start at the far left and write the amount of the check in words. Draw a heavy wavy line from the end of the written amount to the word "dollars." One hundred fifty-nine and ⁹⁰/₁₀₀ DOLLARS

Always sign checks with the same signature (payor). Bill Cornett

Numbers along the bottom row are printed in magnetic ink.

Bank number @E789045 **Account number** @149735505 **The check number appears here and in the upper-right corner.** @0058 **When the check is processed, the amount of the check is imprinted here. It should match the check amount (\$159.90).** @00000015990@

Depositing your Check

Name of depositor → Victoria Montoya
6128 Deer Creek Way
Tampa, FL 33612

Date → DATE March 29 20__

Account number in magnetic ink → **1ST** First National Bank of Dunton
Tamarac, Florida 33319
⑈ 58 90 39 ⑈

	CASH	25	00		
CHECKS		108	04		
		38	15		
TOTAL FROM OTHER SIDE					
	TOTAL	171	19		
	LESS CASH RECEIVED	40	00		
	NET DEPOSIT	131	19		

USE OTHER SIDE FOR ADDITIONAL LISTING

Value of bills and coins →

Various checks →

Total →

Cash received →

Actual amount deposited to account →

What About Direct Deposit?

Keeping Track of Your Funds - The Simple Math of It

CHECK NO.	DATE	CHECK ISSUED TO	AMOUNT OF CHECK	✓	DATE OF DEP.	AMOUNT OF DEPOSIT	BALANCE
BALANCE BROUGHT FORWARD →							3518 72
1435	5/8	Swan Brothers	378 93				3139 79
1436	5/8	Class Acts	25 14				3114 65
1437	5/9	Mirror Lighting	519 65				2595 00
		Deposit			5/10	3821 17	6416 17
1438	5/10	Woodlake Auditorium	750 00				5666 17
		Deposit			5/12	500 00	6166 17
1439	5/12	Rick's Clowns	170 80				5995 37
1440	5/14	Y.M.C.A.	219 17				5776 20
	5/14	ATM	120 00				5656 20
		Deposit			5/15	326 15	5982 35
1441	5/16	Stage Door Playhouse	825 00				5157 35
1442	5/17	Gilbert Eckern	1785 00				3372 35
		Deposit			5/19	1580 25	4952 60

When is your account credited with your deposit?

What are ATM charges?

How do they affect your balance?

Understanding your Paycheck

Gross Earnings - the number of hours worked multiplied by the hourly wage
Deductions:

FICA (Federal Insurance Contribution Act) or Social Security
The rate in 1999 was 6.2% (It is matched dollar for dollar by the employer.)

Medicare Tax in 1999 was 1.45%

Other possible deductions:

Federal Income Tax Withholding
State Tax Withholding
State Disability Insurance
Union dues
Retirement
Group Insurance Plans
Uniform Expenses
Charitable contributions
Credit Union Savings
Loan Payments
Purchase of Bonds

Subtracting deductions results in **Net Pay**

Every employee must have a Social Security Number

'<http://ssa.gov>'

This web site includes information on how to get your social security card and how to keep your address information current.

What do you do with your paycheck?

Good luck with using all the 'angles' and all your 'math \$\$\$ wisely!

Pretest for Basic Math Skills

1.	Round 9.86 to the nearest tenth.	1.	
2.	Round \$.054¢ to the nearest cent.	2.	
3.	Round \$549.49 to the nearest dollar.	3.	
4.	Multiply: $\begin{array}{r} 6718 \\ \times 2392 \\ \hline \end{array}$	4.	
5.	Divide: $11,032 \div 35 =$	5.	
6.	Change: $6 \frac{3}{8}$ to an improper fraction	6.	
7.	Change: $\frac{43}{32}$ to a mixed number	7.	
8.	Write: $\frac{30}{42}$ in lowest terms	8.	
9.	Add: $\begin{array}{r} \frac{5}{8} \\ \frac{3}{4} \\ + \frac{1}{2} \\ \hline \end{array}$	9.	
10.	Add: $\begin{array}{r} 7 \frac{1}{2} \\ 2 \frac{1}{4} \\ \hline 10 \frac{2}{3} \end{array}$	10.	
11.	Subtract: $\frac{5}{8} - \frac{5}{24} =$	11.	
12.	Subtract: $\begin{array}{r} 83 \frac{3}{4} \\ -21 \frac{2}{5} \\ \hline \end{array}$	12.	

13.	Multiply: $\frac{3}{8} \times \frac{3}{5} =$	13.	
14.	Divide: $15 \frac{1}{4} \div 5 \frac{1}{8} =$	14.	
15.	Convert 0.875 to a fraction	15.	
16.	Convert $\frac{3}{4}$ to a decimal	16.	
17.	Subtract: $\begin{array}{r} 598.316 \\ - \underline{79.839} \end{array}$	17.	
18.	Multiply: $\begin{array}{r} 20.72 \\ \times \underline{6.46} \end{array}$	18.	
19.	Divide: $309.6 \div 1.2 =$	19.	
20.	Convert: $\frac{3}{8}$ to a percent	20.	
21.	A warehouse employee of a computer manufacturer is paid \$11.50 per hour with time and a half for all hours over 40 in a week. Find the employee's gross pay if she worked 46 hours in one week.	21.	

22.	According to ATM Crime and Security newsletter, in one region there were 70 ATM burglaries and attempted burglaries in 1992 and 200 in 1997. How many more of these crimes were there in 1997 than in 1992?	22.	
23.	A group of American soldiers and nurses, veterans of the Vietnam War, rode bicycles from Hanoi to Saigon. If they rode 75 miles each day and the trip took 16 days, what is the distance between these two cities in Vietnam?	23.	
24.	A truck weighs 9,250 pounds when empty. After being loaded with firewood, the truck weighs 21,375 pounds. What is the weight of the firewood?	24.	
25.	A hydraulic jack contains $\frac{7}{8}$ gallon of hydraulic fluid. A cracked seal resulted in a loss of $\frac{1}{6}$ gallon of fluid in the morning and another $\frac{1}{3}$ gallon in the afternoon. Find the amount of fluid remaining.	25.	

Page 8

Average of all long jumps	8.25 meters
Average of US long jumps	8.30 meters
US long jumps in feet	27.22 feet

Rope	\$ 7.92	54.12 feet
Wire	\$ 3.15	9.84 feet

Page 9

Total Cost \$2,470.11

Page 10

12yds x 9 yds x 8 in =	36 tons
15 ft x 8 yds x 8 in =	13 tons
9 yds x 14yds x 8 in =	42 tons
9 yds x 16yds x ft =	48 tons
10 yds x 13yds x 8 in =	43.3 tons

Page 11

(S-5 + B-3)	14,079.60 tons
(S-5)	5,279.4 tons
(B-3)	59,135.4 tons
(S-5 + B-3)	7,039.8 tons
(B-3)	4,927.86 tons

Page 12

Crushed run stone	14.94 tons
Stone	45 tons
Stone/trench	9 tons
Stone/land	50.99 tons
Stone	9.59 tons

Concrete/sidewalk	586.6 tons
Concrete/entrance	264.5 tons
Concrete/driveway	22.2 tons
Concrete/pave	4 tons

Page 14

Screw length	$\frac{7}{8}$ inches	22.23 millimeters
Diameter	1 $\frac{11}{16}$ inches	42.86 millimeters

Basic Math Skills for the Workplace - Answer Key

Pretest Answers (Pages 1, 2, and 3)

1	9.9	6	51/8	11	5/12	16	.75	21	\$563.50
2	\$ 0.05	7	1 11/32	12	62 7/20	17	518.477	22	130
3	#540	8	5/7	13	9/40	18	133.8512	23	1200mi
4	16,069,456	9	1 7/8	14	3 1/20	19	258	24	12,125
5	315.2	10	20 5/12	15	7/8	20	37.5%	25	3/8 gal

Page 4

Exercise

Rounding

- | | | | |
|---------------|-----------------|-----------------|-----------|
| (a) 370 | Exact 12,605 | Exact 10,533 | Exact 545 |
| (b) 67,000 | Estimate 12,760 | Estimate 10,370 | Est. 600 |
| (c) 1,000,000 | | | |

Page 5 Reading numbers

Ninety eight and five thousand eight hundred ninety-two ten thousandths

Page 6 Rounding

5 8 yes 98.6

24.648 24.65 24.6

<u>\$ 49.00</u>	<u>\$594.00</u>
<u>\$2,690.00</u>	<u>\$ 1.00</u>

\$20	\$36	\$372
<u>- 7</u>	<u>+ 8</u>	<u>+ 513</u>
<u>\$ 13</u>	<u>\$44</u>	<u>\$885</u>

Page 7

McDonald's US Customers 7,170.8 million

Estimate:

Multiply 360 (364) × 20 (19.7) = 7,200 million

Gross Pay

\$207 \$279

Page 15

9/24 gallons of fluid remaining

37½% fluid remaining

$$\begin{aligned}
 &= 33 \% & 7/24 &= & 29 \frac{4}{25}\% \\
 1/6 &= 16 \% & 1/12 &= & 8 \% \\
 &= 12 \frac{1}{2}\%
 \end{aligned}$$

Page 16

Hazardous waste dump	1/12 mile
Exercise yard	130 feet
Peat moss left	1 23/24 cubic yards
Oil delivered	50 cases
Earn for the week	\$315,56
Acres fertilized	160 acres

Page 17

Chemical needed	21 ounces
Number of trips	60 trips
Pieces of weather stripping	320 pieces
Paint left over	35 7/8 gallons

$$\begin{aligned}
 \frac{5}{8} &= 0.625 = 62 \frac{1}{2} \% & & = 0.125 & = & 12 \frac{1}{2} \% \\
 \frac{3}{4} &= .75 = 75 \% & & 7/20 = .35 & = & 35\% \\
 &= .875 = 87 \frac{1}{2} \% & & 3/5 = .60 & = & 60\%
 \end{aligned}$$

6% Commission = \$4500.00

Page 18

Worker wish list

21%	=	2.9 million
18%	=	2.5 million
14%	=	1.96 million
27%	=	3.78 million

Page 19

Sleeping late	1647
Going to the beach	1707
Shopping	1707
Playing sports	1727
Boy/girlfriend	1727
Going to college	1727
Surfing the net	1807
Movies	1827

Page 20

Male workforce 71 million
Female percentage 46%

One minute in 2000 \$2.6 million

Drivers / seatbelts 836

Right angle = 90° Obtuse angle more than 90° Acute angle less than 90°
Straight angle = 180°

Page 21

Angle plotted is an acute angle

Page 22

Corresponding angle is 105°

Page 24

When is your account credited with your deposit?

Depends on the time of day it is deposited.

Before 2 PM - credited same day

After 2 PM - credited on the next bank business day

What are ATM charges?

Charges to your account for using your check cashing card at a machine not owned by your bank.

How do they affect your balance?

They must be subtracted from your total.

Usually you have to double them because the ATM machine charges and so does your bank.