

Unit 4

Estimating, Time and Shapes

Topic A: Estimating

You use numbers in your everyday life. You often use **estimating** in your everyday life.

You go shopping and you only have twenty dollars, you may need to **estimate** how much your groceries are going to cost before you go to pay for them.

You commute by bus each day to work and it takes thirty-three minutes going to work and thirty-three minutes coming home at the end of the day. You would say that it takes you about one hour on the bus.

These are examples of **estimating**.

You have already learned about **rounding** numbers. You need to be able to round numbers in order to be able to **estimate**.

When you solve math problems, it is a good idea to **estimate** what the answer may be.

Estimating the answer means finding an answer that is close to the real answer. **Estimating** helps you to see if the real answer is sensible. To **estimate** an answer, you need to round the numbers then add or subtract the rounded numbers. Remember to round to the nearest ten.

$$\begin{array}{r} \text{Example:} \quad 23 \\ + 45 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Estimate:} \quad 20 \\ + 50 \\ \hline 70 \end{array}$$

$$\begin{array}{r} \text{Example:} \quad 67 \\ - 31 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Estimate:} \quad 70 \\ - 30 \\ \hline 40 \end{array}$$

$$\begin{array}{r} \text{Example:} \quad 372 \\ + 416 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Estimate:} \quad 370 \\ + 420 \\ \hline 790 \end{array}$$

$$\begin{array}{r} \text{Example:} \quad 564 \\ - 243 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Estimate:} \quad 560 \\ - 240 \\ \hline 320 \end{array}$$

Exercise One

Estimate the following answers. Be sure to round to the nearest 10 before adding. Check your work using the answer key at the end of the exercise.

a)
$$\begin{array}{r} 27 \\ + 31 \\ \hline \end{array}$$

Estimate:

b)
$$\begin{array}{r} 42 \\ + 51 \\ \hline \end{array}$$

Estimate:

c)
$$\begin{array}{r} 26 \\ + 32 \\ \hline \end{array}$$

Estimate:

d)
$$\begin{array}{r} 14 \\ + 52 \\ \hline \end{array}$$

Estimate:

e)
$$\begin{array}{r} 44 \\ + 24 \\ \hline \end{array}$$

Estimate:

f)
$$\begin{array}{r} 31 \\ + 27 \\ \hline \end{array}$$

Estimate:

g)
$$\begin{array}{r} 65 \\ + 22 \\ \hline \end{array}$$

Estimate:

h)
$$\begin{array}{r} 46 \\ + 23 \\ \hline \end{array}$$

Estimate:

i)
$$\begin{array}{r} 23 \\ + 72 \\ \hline \end{array}$$

Estimate:

j)
$$\begin{array}{r} 42 \\ + 36 \\ \hline \end{array}$$

Estimate:

k)
$$\begin{array}{r} 64 \\ + 14 \\ \hline \end{array}$$

Estimate:

l)
$$\begin{array}{r} 32 \\ + 20 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} m) 423 \\ + 324 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} n) 526 \\ + 345 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} o) 123 \\ + 541 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} p) 752 \\ + 243 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} q) 429 \\ + 316 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} r) 324 \\ + 115 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} s) 162 \\ + 531 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} t) 156 \\ + 322 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} u) 302 \\ + 473 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} v) 326 \\ + 607 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} w) 312 \\ + 148 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} x) 341 \\ + 248 \\ \hline \end{array}$$

Estimate:

Answers to Exercise One

a) 60	b) 90	c) 60	d) 60	e) 60	f) 60	g) 90
h) 70	i) 90	j) 80	k) 70	l) 50	m) 740	n) 880
o) 660	p) 990	q) 750	r) 440	s) 690	t) 480	u) 770
v) 940	w) 460	x) 590				

Exercise Two

Estimate the following answers. Be sure to round to the nearest 10 before subtracting. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} \text{a) } 35 \\ - 16 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{b) } 52 \\ - 14 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{c) } 67 \\ - 19 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{d) } 51 \\ - 23 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{e) } 36 \\ - 17 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{f) } 72 \\ - 44 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{g) } 38 \\ - 19 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{h) } 74 \\ - 26 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{i) } 93 \\ - 89 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{j) } 82 \\ - 57 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{k) } 56 \\ - 27 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{l) } 94 \\ - 48 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{m) } 752 \\ - 342 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{n) } 765 \\ - 439 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{o) } 673 \\ - 424 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{p) } 645 \\ - 309 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{q) } 811 \\ - 502 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{r) } 591 \\ - 57 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{s) } 972 \\ - 447 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{t) } 178 \\ - 152 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{u) } 471 \\ - 146 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{v) } 316 \\ - 222 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{w) } 678 \\ - 425 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{x) } 486 \\ - 211 \\ \hline \end{array}$$

Estimate:

Answers to Exercise Two

a) 20	b) 40	c) 50	d) 30	e) 20	f) 30	g) 20
h) 40	i) 0	j) 20	k) 30	l) 40	m) 410	n) 330
o) 250	p) 340	q) 310	r) 530	s) 520	t) 30	u) 320
v) 100	w) 250	x) 280				

Exercise Three

Estimate the following answers. Be sure to round to the nearest ten before adding or subtracting. Remember to circle the information and underline what is being asked. Check your work using the answer key at the end of the exercise.

Example: There are 186 people living in my apartment building. If 103 are children, how many are adults?

There are 186 people living in my apartment building. If 103 are children, how many are adults?

$$\begin{array}{r} 186 \\ - 103 \\ \hline \end{array} \qquad \text{Estimate:} \qquad \begin{array}{r} 190 \\ - 100 \\ \hline 90 \end{array}$$

About 90 people are adults.

- a) The bus has 84 passenger seats. All the seats are filled and 39 passengers are standing. How many passengers are on the bus?

b) Trisha counted 67 boxes on one shelf. She counted 78 boxes on the next shelf. How many boxes were there altogether?

c) The library loaned out 157 books on Monday. It loaned out 118 books on Tuesday. How many book did it loan on both days?

d) Ryan worked on the computer for 78 minutes. Helen worked on the computer for 54 minutes. How much longer did Ryan work on the computer?

e) The Ludlow factory has 73 people working in the factory. The Watson factory has 48 people working in their factory. How many more people work in the Ludlow factory?

f) Mr. Martinez needs 257 metres of fencing. He has 125 metres. How much more fencing does he need to buy?

Answers to Exercise Three

a) 120 passengers

b) 150 boxes

c) 280 books

d) 30 minutes

e) 20 people

f) 130 meters

Topic B: Time

The ancient Babylonians used a number system based on 60. We still use their number system when we talk about time.

There are 60 minutes in an hour, and there are 60 seconds in a minute.

60 minutes = 1 hour
60 seconds = 1 minute

Writing Time in Standard Format

Time is written in a standard format.

Hours: Minutes: Seconds

Example: 12 noon
would be written as 12:00:00
or 12:00 (without the seconds)

Example: 4 o'clock
would be written as 4:00:00
or 4:00 (without the seconds)

Example: 8 hours, 47 minutes, 3 seconds
would be written as 8:47:03

Note: When there is only one number, put in a zero to hold the tens place.

Example: 3 hours, 9 minutes, 3 seconds
would be written as 3:09:03

Exercise One

Write the following times in standard format. Check your work using the answer key at the end of the exercise.

Example: 2 hours, 7 minutes, 31 seconds
2:07:31

Note: If there is only one number, remember to put in a zero to hold the tens place.

a) 3 hours, 56 minutes, 42 seconds

b) 12 hours, 2 minutes, 29 seconds

c) 1 hour, 23 minutes, 54 seconds

d) 6 hours, 7 minutes, 39 seconds

e) 11 hours, 41 minutes

f) 7 hours, 14 minutes, 59 seconds

g) 21 hours, 36 minutes

h) 1 hour, 51 minutes, 41 seconds

i) 5 hours, 18 minutes, 10 seconds.

Answers to Exercise One

a) 3:56:42

b) 12:02:29

c) 1:23:54

d) 6:07:39

e) 11:41

f) 7:14:59

g) 21:36

h) 1:51:41

i) 5:18:10

A.M. and P.M.

You need to go to the dentist at 9:00 a.m. This is in the morning because of the **a.m.** The abbreviation **a.m.** means **ante meridiem** or **before noon**. We use a.m. for any times between 12 midnight and 12 noon.

You are meeting friends for dinner at 6:00 p.m. This is at night because of the **p.m.** The abbreviation **p.m.** means **post meridiem** or **after noon**. We use p.m. for any times between 12 noon and 12 midnight.

Example: You catch the bus at 7 o'clock in the morning.
The time would be written as 7:00 a.m.

Example: You are meeting friends to go fishing at 6:30 at night.
The time would be written as 6:30 p.m.

Exercise Two

Write the following times using **a.m.** or **p.m.** Check your work using the answer key at the end of the exercise.

Example: The sun rises at 7:07 in the morning.

7:07 a.m.

- a) Your shift at work starts at 8:30 in the morning.

- b) Your class starts at 1:00 in the afternoon.

- c) Your son has soccer practice at 4:00 in the afternoon.

- d) You catch your bus at 6:15 in the morning.

- e) You need to go to the doctor at 3:20 in the afternoon.

- f) You eat dinner at 6:30 in the evening.

- g) Your children go to bed at 8:45 in the evening.

- h) Your alarm goes off at 5:50 in the morning.

- i) Your friend called at 11:25 in the morning.

Answers to Exercise Two

- | | | |
|--------------|--------------|---------------|
| a) 8:30 a.m. | b) 1:00 p.m. | c) 4:00 p.m. |
| d) 6:15 a.m. | e) 3:20 p.m. | f) 6:30 p.m. |
| g) 8:45 p.m. | h) 5:50 a.m. | i) 11:25 a.m. |

Rounding Time

When you round time, if the minutes are more than thirty, you round up to the next number of hours. If the minutes are less than thirty, you remain at the same number of hours.

Example: If it took 45 minutes to drive to school, you would round that to one hour because 45 minutes is greater than 30 minutes.

Example: If it took one hour and 15 minutes to get to school by bus, you would round that to one hour because 15 minutes is less than 30 minutes.

Example: If it took 8 hours and 37 minutes to complete the painting job, you would round that to 9 hours because 37 minutes is greater than 30 minutes.

Exercise Three

Round the following times to the nearest hour. Check your work using the answer key at the end of the exercise.

Example: The movie lasted 3 hours and 13 minutes.

3 hours

- a) You needed 2 hours and 15 minutes for grocery shopping.
- b) It took 1 hour and 50 minutes to cook dinner.
- c) You drove for 9 hours and 23 minutes.
- d) Your baby slept for 1 hour and 47 minutes.

- e) You visited with friends for 3 hours and 11 minutes.

- f) It took 2 hours and 35 minutes to play the hockey game.

- g) You rode on the bus for 1 hour and 28 minutes.

- h) You walked to work in 38 minutes.

- i) How long does it take you to get to school?

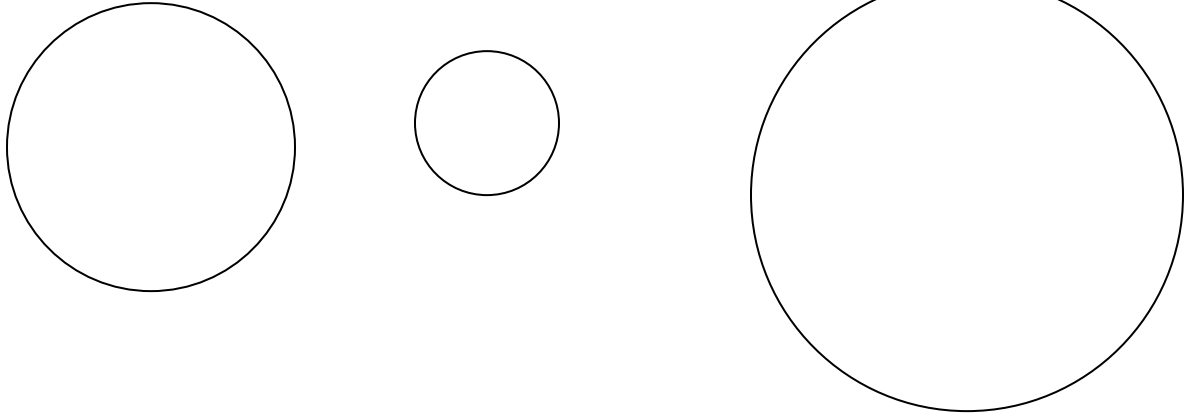
Answers to Exercise Three

- | | | |
|------------|------------|-------------------------------|
| a) 2 hours | b) 2 hours | c) 9 hours |
| d) 2 hours | e) 3 hours | f) 3 hours |
| g) 1 hour | h) 1 hour | i) check with your instructor |

Topic C: Shapes

Circle

The circle is a shape we all know.



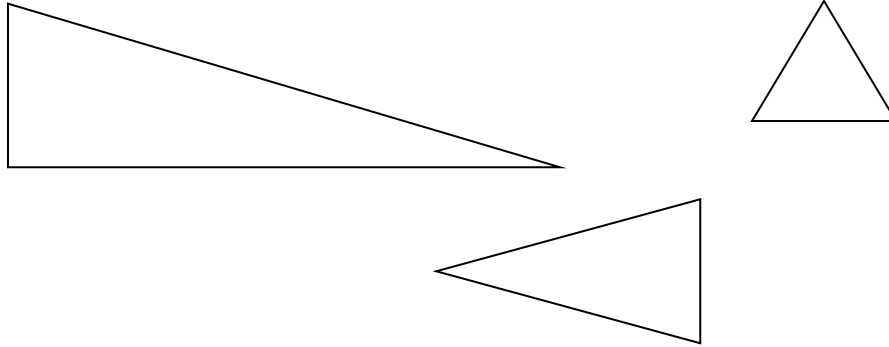
These objects suggest the idea of a circle.

rim of coffee cups and glasses top of lamp shades
top of cans of food compact discs
the ends of pipes and hoses (called the *cross-section*)
the coloured part of your eye (the iris)

Add some examples of your own.

Triangle

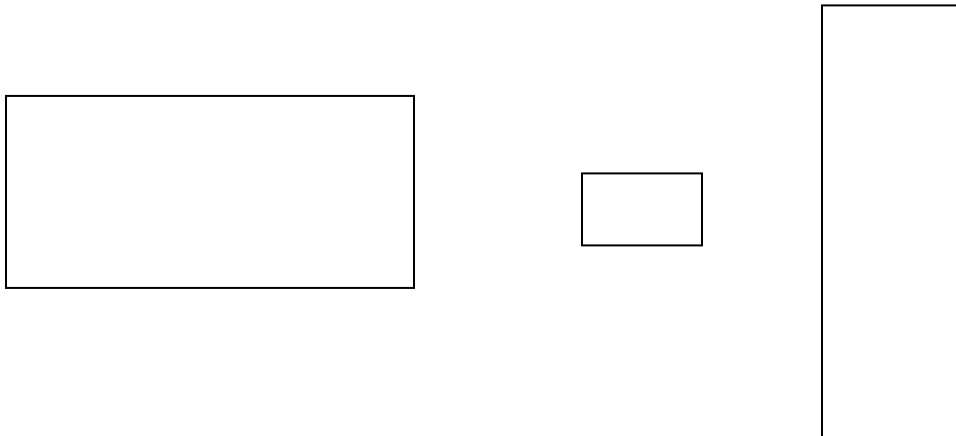
A **triangle** is a three-sided shape. Triangles have **three sides** and **three angles**.



Draw some different sized triangles here.

Rectangle

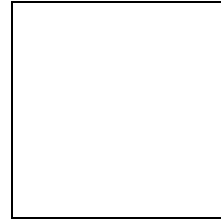
A **rectangle** is a four-sided shape. Rectangles have four sides and four **right** angles (square corners).



Can you think of anything that has a rectangle shape? Write it here.

Squares

A **square** is a special kind of rectangle. Squares have square corners and four sides are the same length

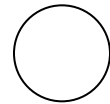


Can you think of anything that has a square shape? Write it here.

Exercise One

The following things give the idea of a shape. Write the name of the shape in each blank. Then draw the shape.

Example: A cookie is a circle.



a) A door is a _____.

b) This page is a _____.

c) A yield sign is a _____.

d) A room is usually a _____.

e) A coin is a _____.

f) A ten dollar bill is a _____.

g) The rim of a jar is a _____.



h) This warning sign is a _____.

i) A pizza is a _____.

Answers to Exercise One

a) rectangle

b) rectangle

c) triangle

d) rectangle

e) circle

f) rectangle

g) circle

h) triangle

i) circle

Exercise Two

Look around the room and find each of the following shapes. Write the name on the line. Have your instructor check your answers.

Example: A rectangle door

a) A circle _____

b) A rectangle _____

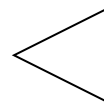
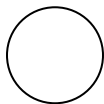
c) A square _____

d) A triangle _____

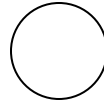
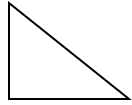
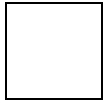
Exercise Three

Circle the correct shape in each line. Have your instructor check your answers.

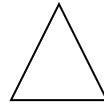
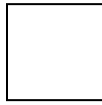
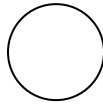
a) A rectangle.



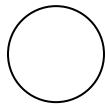
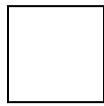
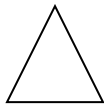
b) A circle



c) A square



d) A triangle



Exercise Four

What shape are the following things? Write **triangle, square, rectangle or circle** on the line.

a)



b)



c)



d)



e)



f)



g)



h)



Answers to Exercise Four

- a) circle b) triangle c) rectangle d) square e) rectangle or triangle
f) circle g) square h) rectangle

Unit 4 Review – Estimating, Time, Shapes

You will now practice all the skills you learned in Unit 4. Check your work using the answer key at the end of the review.

A. Estimate the following sums. Be sure to round to the nearest 10 before adding.

a)
$$\begin{array}{r} 23 \\ + 32 \\ \hline \end{array}$$

Estimate:

b)
$$\begin{array}{r} 68 \\ + 17 \\ \hline \end{array}$$

Estimate:

c)
$$\begin{array}{r} 34 \\ + 28 \\ \hline \end{array}$$

Estimate:

d)
$$\begin{array}{r} 42 \\ + 53 \\ \hline \end{array}$$

Estimate:

e)
$$\begin{array}{r} 74 \\ + 24 \\ \hline \end{array}$$

Estimate:

f)
$$\begin{array}{r} 33 \\ + 28 \\ \hline \end{array}$$

Estimate:

g)
$$\begin{array}{r} 17 \\ + 42 \\ \hline \end{array}$$

Estimate:

h)
$$\begin{array}{r} 27 \\ + 18 \\ \hline \end{array}$$

Estimate:

B. Estimate the following sums. Be sure to round to the nearest 10 before adding.

a)
$$\begin{array}{r} 625 \\ + 254 \\ \hline \end{array}$$

Estimate:

b)
$$\begin{array}{r} 432 \\ + 325 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{c) } 328 \\ + 163 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{d) } 529 \\ + 248 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{e) } 536 \\ + 137 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{f) } 867 \\ + 215 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{g) } 843 \\ + 107 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{h) } 435 \\ + 127 \\ \hline \end{array}$$

Estimate:

C. Estimate the following answers. Be sure to round to the nearest 10 before subtracting.

$$\begin{array}{r} \text{a) } 43 \\ - 28 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{b) } 64 \\ - 25 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{c) } 73 \\ - 47 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{d) } 83 \\ - 24 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{e) } 68 \\ - 28 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{f) } 54 \\ - 22 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{g) } 67 \\ - 29 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{h) } 85 \\ - 29 \\ \hline \end{array}$$

Estimate:

D. Estimate the following answers. Be sure to round to the nearest 10 before subtracting.

$$\begin{array}{r} \text{a) } 625 \\ - 407 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{b) } 908 \\ - 413 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{c) } 976 \\ - 134 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{d) } 882 \\ - 257 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{e) } 572 \\ - 154 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{f) } 908 \\ - 713 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{g) } 965 \\ - 702 \\ \hline \end{array}$$

Estimate:

$$\begin{array}{r} \text{h) } 988 \\ - 254 \\ \hline \end{array}$$

Estimate:

E. Write the following times in standard format.

a) 10 hours, 20 minutes, 12 seconds

b) 8 hours, 45 minutes, 6 seconds

c) 5 hour, 32 minutes, 45 seconds

d) 1 hour, 7 minutes, 28 seconds

e) 12 hours, 55 minutes

f) 6 hours, 5 minutes, 39 seconds

F. Write the following times using a.m. or p.m.

a) The movie starts at 6:45 in the evening.

b) Your friend calls and wakes you up at 3:23 in the morning.

c) Your dog barks at the mailman at 2:35 in the afternoon.

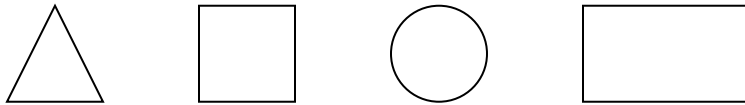
d) Your morning break is at 10:15.

G. Round the following times to the nearest hour.

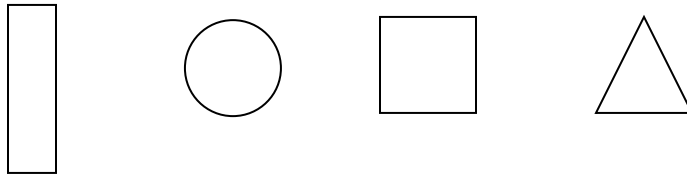
- a) You took a walk for 47 minutes.
- b) Your round trip (there and back) to the mall took 2 hours and 12 minutes.

H. Circle the correct shape in each line.

- a) A triangle



- b) A square



I. The following things give the idea of a shape. Write the name of the shape in each blank.

- a) A window is a _____.

b) A checkerboard is a _____.

c) A watch is a _____.

d) A yield sign is a _____.

J. Word Problems. Estimate the following answers. Be sure to round to the nearest 10 before adding or subtracting. Remember to circle the information and underline what is being asked.

a) The Sears Tower is 443 metres tall. It has a 105 metre TV antenna on top.
Estimate the height of the building and the antenna.

b) A restaurant used 76 kilograms of potatoes and 68 kilograms of meat.
Estimate how many kilograms of potatoes and meat the restaurant used altogether.

c) Paolo's father weighs 78 kilograms. Paolo weighs 29 kilograms. **Estimate** how much more Paolo's father weighs.

d) Chi bought 54 litres of gasoline on Tuesday. He bought 38 litres of gasoline on Friday. **Estimate** how many litres of gas he bought altogether.

Answers to Unit 4 Review

A.

- a) 50 b) 90 c) 60 d) 90 e) 90 f) 60
g) 60 h) 50

B.

- a) 880 b) 760 c) 490 d) 780 e) 680 f) 1 090
g) 950 h) 570

C.

- a) 10 b) 30 c) 20 d) 60 e) 40 f) 30
g) 40 h) 60

D.

- a) 220 b) 500 c) 850 d) 620 e) 420 f) 200
g) 270 h) 740

E.

- a) 10:20:12 b) 8:45:06 c) 5:32:45
d) 1:07:28 e) 12:55 f) 6:05:39

F.

- a) 6:45 p.m. b) 3:23 a.m. c) 2:35 p.m.
d) 10:15 a.m.

G.

- a) 1 hour b) 2 hours

H.

Have your instructor check these.

I.

- a) rectangle b) square c) circle
d) triangle

J.

- a) 550 metres b) 150 kilograms c) 50 kilograms
d) 90 litres

CONGRATULATIONS!!

Now you have finished Unit 4.

TEST TIME!

Ask your instructor for the
Practice Test for this unit.
Once you've done the practice test,
you need to do the unit 4 test.
Again, ask your instructor for this.
Good luck!