

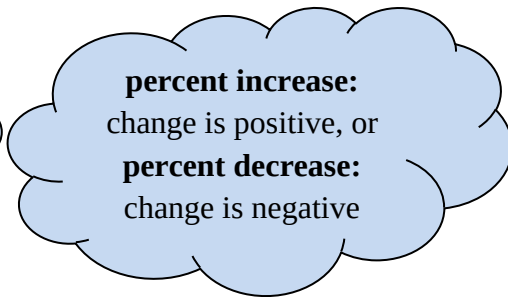
Technical Math for Allied Health

Class notes

Percent Increase and Decrease, Military Time, and Geometry (module 2)

Percent Increase and Decrease: We might have a quantity that changed over time and we are interested in how much it changed, in relation to the original quantity. That is often described in percent change: percent increase (if the quantity went up) or percent decrease (if the quantity went down). In general, we have the formula below.

$$\text{Percent change} = \frac{\text{change}}{\text{old value}} = \frac{\text{new value} - \text{old value}}{\text{old value}} \times 100$$



percent increase:
change is positive, or
percent decrease:
change is negative

expl 1: Solve. Round to the nearest whole percent.

The cost of attending a private college rose from \$19,000 in 2000 to \$22,200 in 2006.

Find the percent increase.

expl 2: Mike's health insurance premium for last year was \$1,512. If he paid \$1,440 this year, what is the percent of decrease on his health insurance premium? Round to the nearest hundredth of a percent.

expl 3: The numbers of students who passed the exit exam this semester increased 40% from last semester. If 28 people passed the exit exam last semester, how many passed the exit exam this semester? Include units.

Military Time (24 Hour Notation): The healthcare fields use military times with medical recordings. Look at the table below for equivalencies between military time and the 12-hour clock.

12-Hour Clock	Military Time		12-Hour Clock	Military Time
12:00 AM (midnight)	0000 hours		12:00 PM (noon)	1200 hours
1:00 AM	0100 hours		1:00 PM	1300 hours
2:00 AM	0200 hours		2:00 PM	1400 hours
3:00 AM	0300 hours		3:00 PM	1500 hours
4:00 AM	0400 hours		4:00 PM	1600 hours
5:00 AM	0500 hours		5:00 PM	1700 hours
6:00 AM	0600 hours		6:00 PM	1800 hours
7:00 AM	0700 hours		7:00 PM	1900 hours
8:00 AM	0800 hours		8:00 PM	2000 hours
9:00 AM	0900 hours		9:00 PM	2100 hours
10:00 AM	1000 hours		10:00 PM	2200 hours
11:00 AM	1100 hours		11:00 PM	2300 hours

expl 4: Fill in the following table with the missing clock times as needed.

	12-hour Clock Time	Military Time
a)	7:15 PM	
b)	6:00 AM	
c)		0336 hours
d)		1654 hours
e)		1700 hours

Geometry Review

Do you know what an acute angle is?
Right? Obtuse? Straight? Reflex?

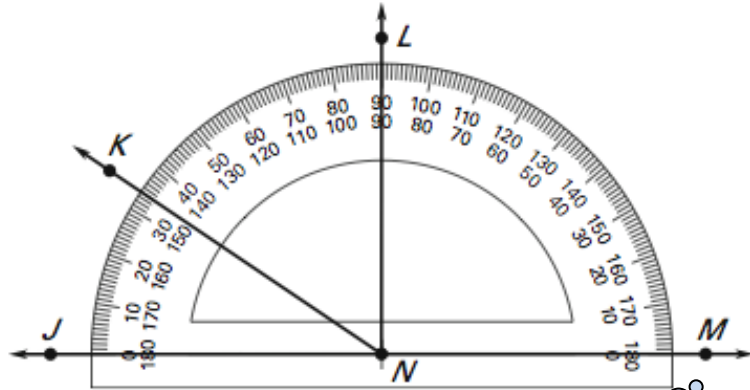
expl 5: Tell the measure of each angle and then classify it as acute, obtuse, right, or straight.

a.) $\angle JNK$

b.) $\angle KNM$

c.) $\angle LNM$

d.) $\angle JNM$



Remember that a straight line is 180 degrees. All the way around a circle is 360 degrees.

Quickly record the definitions for the following.

Acute angle:

Right angle:

Obtuse angle:

Straight angle:

Reflex angle:

Complementary angles:

sum to 90 degrees

Supplementary angles:

sum to 180 degrees

expl 5: If $\angle 1$ and $\angle 2$ are complementary angles, then find $\angle 1$ if we are given...

a.) $m\angle 2 = 25^\circ$

b.) $m\angle 2 = 75^\circ$

c.) $m\angle 2 = 48^\circ$

expl 6: If $\angle 1$ and $\angle 2$ are supplementary angles, then find $\angle 1$ if we are given...

a.) $m\angle 2 = 125^\circ$

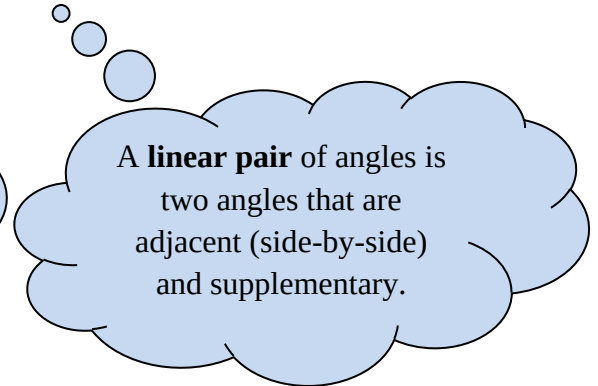
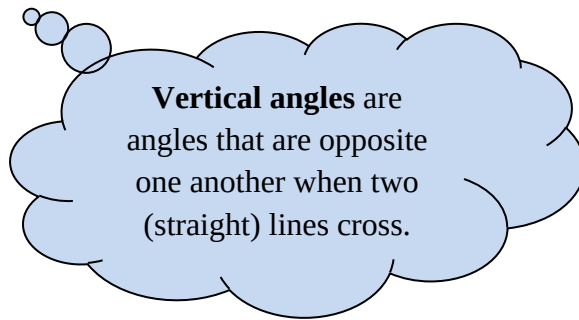
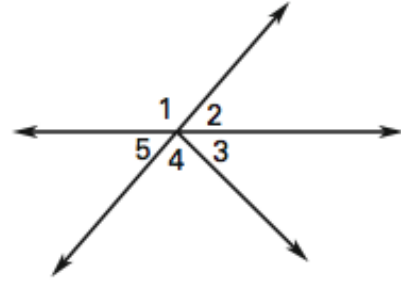
b.) $m\angle 2 = 95^\circ$

c.) $m\angle 2 = 38^\circ$

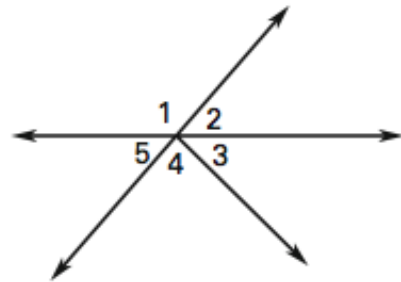
expl 7: Using the picture to the right, name angles that fit the descriptions below.

a.) They are vertical angles.

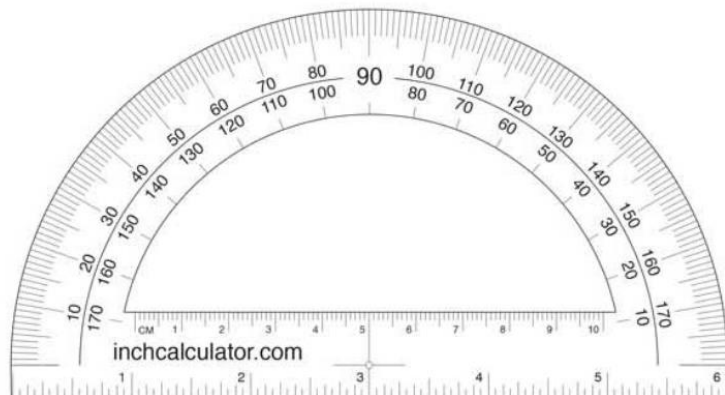
b.) They make up a linear pair.



expl 8: Use this picture to draw in, with an arc, a reflex angle. There are multiple answers possible.

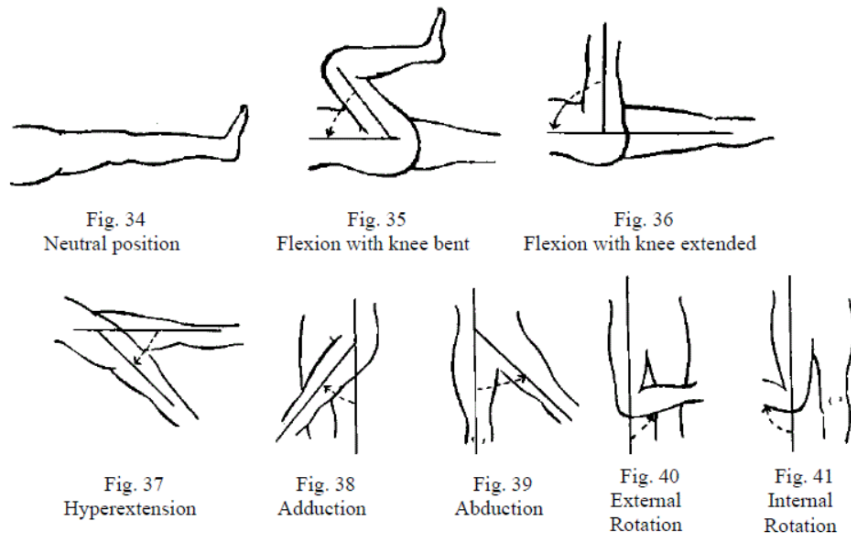


expl 9: Practice your protractor skills by finding the measure of angle 5 pictured above. Cut this protractor out if you need. You may need to extend the rays of the angle.



Pictures such as this one from Wisconsin's Department of Workforce Development is used to assess impairment. A medical instrument called a **goniometer** is used to measure a patient's ability to rotate or bend.

The Hip



(source: <https://dwd.wisconsin.gov/dwd/publications/wc/wkc-7761-p.htm>)

Here is an example of a **goniometer** explained on the Website <https://www.fab-ent.com/goniometers-what-are-we-really-measuring/>

