Apprenticeship Workplace Mathematics 10

Review Notes for the Provincial Exam

Jan. 4 C.1
5 C.2
6 C.3
7 C.4

10 R1
11 Q1
12 C5
13 C6
14 (PRO-D)

17 C7
18 R2
19 Exam
20 Exam
21 Go over Exam

13 days

Chapters of study:

Chapter 1 – Unit Pricing and Currency Exchange

Chapter 2 – Earning an Income

Chapter 3 – Length, Area, and Volume

Chapter 4 – Mass, Temperature, and Volume

Chapter 5 – Angles and Parallel Lines

Chapter 6 – Similarity of Figures

Chapter 7 – Trigonometry of Right Triangles

Chapter 1 – Unit Pricing and Currency Exchange

1. Ratios

Example 1 -- Simplify the following ratios → **proportions**:

a) $\frac{32:96}{32\ \ 32}$ 1:3	b) $\frac{26 \div 13}{39 \div 13} = \frac{2}{3}$

Example 2 -- Solve for x.

a) $\frac{x}{12} = \frac{7}{36}$ $36x = 84$ $x = 2.\overline{3}$	b) $\frac{3}{x} = \frac{11}{7}$ $21 = 11x$ $x = 1.91$

Example 3 -- In a bag of red and green marbles, the ratio of red marbles to green marbles is 5:7. If the bag contains 299 green marbles, how many red marbles are there?

Red : Green

5 : 7

$\frac{5}{7} = \frac{R}{299}$

$R = 214$

2. Rates

Example 1 -- Write a rate statement that indicates how much you earn per hour if you earn $115 in an 8-hour day.

$115 \div 8 = \$14.38$ per hour

Example 2 -- If you earn $61.50 in 6 hours, how much will you earn if you work 20 hours per week?

First, Find hourly wage : $61.50 \div 6 = \$10.25/hr.$

Weekly salary : $\$10.25 \times 20 = \$205/week$

Example 3 – Your dad makes a cleaning solution by mixing 100 g of concentrated Pink Solution in 2 L of water. How much Pink solution will he need for 5 L of water?

Set up a proportion !!

$$\frac{100}{2} = \frac{x}{5}$$

$x = 250\,g$

3. Unit Price

Example 1-- If a dozen eggs at Save-off costs $3.29, how much is each egg? If you buy a flat of 36 eggs at Costmart for $5.75, how much are you saving per egg?

(Dozen) Unit Price : $3.29 \div 12 = 0.27$ cents/ egg

(3 Dozen) $5.75 \div 36 = 0.16$ cents/ egg

You save 0.11 cents / egg

This next one might be hard but you need to know this!

* Example 2 -- James bought 60 L of fuel in Canada for $65.40 CDN last week but bought 15 US gallons of fuel for $55.95 USD in Sumas last night. Which purchase is the better deal? And by approximately how much [calculate]?

WILL COME BACK TO IT !

4. Setting a Price

Example 1 -- A camera shop has a standard markup is 250% on cameras. If cameras are purchased from a wholesaler at $1425.00 per box of 4 cameras, then,

a) what would be the markup per camera?

Price of 1 camera: $1425 \div 4 = \$356.25$

Mark-up 250% of 356.25 $\rightarrow$ $2.50 \times 356.25 = \$890.63$

b) how much would the store charge customers for one camera?

$$356.25 + 890.63 = \$1246.88$$

Example 2 -- Calculate the HST (12%) on a return flight from Abbotsford, BC to Victoria that costs $276.42 each way. What is the total cost for the return trip?

1 way ticket : $1 \times 276.42 = 276.42$

HST : $0.12 \times 276.42 = +33.17$

Total cost : $\$309.59$

5. Sale Items

Example 1 – Mr. Comeau wants to buy a new TV/Bluray combination package for $2500 so he can watch Gilligan's Island re-runs. If he waits till Easter weekend, then the package will be 30% off. How much would he save on the package [before taxes] if he waits until then to buy the entertainment package? Sale Price!

Discount: 30% of 2500 $\rightarrow$ $0.30 \times 2500 = 750$

Sale Price: $2500 - 750 = \$1750$ + taxes

Example 2 – A furniture store advertises that an upcoming sale will see all floor models reduced by 35%. How much would you save if you bought a sofa regularly priced at $1599? Sale Price

Discount : 35% of 1599 $\rightarrow$ $0.35 \times 1599 = 559.65$

Sale Price : $1599 - 559.65 = \$1039.35$ + taxes

Example 3 -- A mountain bike that usually sells for $1350.00 was purchased for $810.00. What was the discount on the mountain bike? As A %.

Discount: $1350 - 810 = \$540$

$$\text{Discount \%} = \frac{540}{1350} \times 100 = 40\ \%$$

6. Currency Exchange

Example 1 -- Before travelling, Jaswant converts $500.00 CAD into American dollars. If one Canadian dollar is worth 0.94192 of a American dollar, how many American dollars will Jaswant receive?

$$\frac{1\ \text{CAD}}{0.94192\ \text{US}} = \frac{500}{x}$$

$\$470.96$ USD

Example 2 – Upon her return from Great Britain, Melanie wishes to exchange 450 Pounds (GBP) for Canadian Dollars. How many CDN will she receive?

Look up 'Exchange Rates' Table :
↳ Bank buying from you

$$\frac{1.8413\ \text{CAD}}{1\ \text{GBP}} = \frac{x}{450}$$

$x = \$828.59$ CAD.

* HW corrections Quest. 1 & 8 *

Chapter 2 – Earning an Income

1. Wages and Salaries

Example 1 -- Logan works as a plumber and earns $65.00/hr. If it takes him 15 hours to complete one job, how much will he earn?

$15 \times 65 = \boxed{\$975}$

Example 2 – Gagan is paid $33.00/hr and is paid time and a half for any hour over his regular 8 hour day. Last week he worked the following hours: $33 \times 1.5 = 49.5$

	Reg.	O.T.
▪ 8 hours on Monday	8	
▪ 10 hours on Tuesday	8	2
▪ 9 hours on Wednesday	8	1
▪ 12 hours on Thursday	8	4
▪ 8 hours on Friday	8	
	40	7

What was his gross income for the week?

$40 \times 33 = 1320$

$7 \times 49.5 = 346.5$

$\boxed{1666.5}$

Example 3 -- Last week, Janine worked 20 hours stocking shelves at the local grocery store. Her gross income was $257.00. What was her hourly wage?

↳ before deductions

$\frac{257}{20} = \boxed{\$12.85/\text{hr}}$

2. Alternate ways to Earn Money

Example 1 -- Jonathan's time card is below. If his hourly wage is $10.65, how much did ~~he~~ earn during the week?

Time Card: Caleb					
Day	**Morning**		**Afternoon**		**Total Hours**
	IN	OUT	IN	OUT	
Monday	9:00	11:45 (2:45)	12:45	4:00 (3:15)	6
Tuesday	8:45	11:30 (2:45)	2:00	5:00 (3)	5:45
Wednesday	9:00	12:09 (3:09)	1:00	4:00 (3)	6:09
Thursday	9:30	12:00 (2:30)	1:00	3:45 (2:45)	5:15
Friday	9:00	11:30 (2:30)	12:30	4:00 (3:30)	6

28:69
↓
29:09 → 29.15 hr

29.15 x 10.65 = $310.45

Example 2 -- Josh works as a tree planter during the summer and he earns his income through piecework. He is paid $0.25 for each seedling he plants. If he plants 500 seedlings in a day, how much will he earn?

500 x 0.25 = $125

Example 3 – Tanvir is a car salesman. He works on commission at a rate of 8.75% of his gross sales. If he sold 10 cars for a total of $600 000.00 last month, how much commission did he earn?

x 0.0875

$ 52500

Example 4 -- When selling a home, a real estate agent in the lower mainland of BC makes 7% commission on the first $100 000.00 of the home's selling price and 5% on any amount over that. How much will Chase make in commission if he sells a house worth $659 999.00?

100 000 x 0.07 = 7000
+
559 999 x 0.05 = 27999.95
$34999.95

3. Additional Earnings

Example 1 -- Roberto works during the winter as the Vancouver Canucks goalie and earns 7.5 million dollars per year. If Roberto wins more than 35 games in a year, he receives a 20% bonus. What would be the value of his bonus?

7500 000 x 0.20 = $1500000 1.5 million

Example 2 -- Megan earns a base salary of $13.75/h plus tips. On a typical day, she bills her customers $1 300.00, and her tips average 15%. What is Megan's average daily income with tips? How much less is her pay if she must give 2% of her bills to the busboys and the greeter and 5% of her bills to the kitchen staff?

8 hours.

Base: 13.75 x 8 = 110
Tips: 1300 x 0.15 = 195
$305

Tips: 1300 x 0.08 = 104
+110
$214

305 - 214 = $91 less

4. Deductions and Net Pay

Example 1 -- Josh's group life insurance is 1.5% of his monthly salary of $4500.00. How much does he pay for group life insurance?

$4500 \times 0.015 = \$67.5$

Example 2 -- Two friends work similar jobs at two different companies. One grosses $2200.00 twice a month and the other one grosses $2000.00 biweekly. Which person has a higher annual salary? (26)

(A)

$2200 \times 2 \times 12 =$

52800

(B)

2000×26

$= 52000$

Example 3 -- Ronaldo has a gross income of $457.65 per week. His before-tax deductions include union dues of 2.5% of his income and a company pension plan contribution of 3%. His federal tax and provincial tax code is 1. Calculate all deductions from his income including CPP and EI. [Use the tables for all deductions.]

Weekly Salary: $457.65

Deductions:

Optional:
- Union dues (2.5%) = 11.44
- Comp P.P (3%) = 13.73

Mandatory:
- F. T. = 32.30
- P. T = 8.60
- CPP = 17.27
- EI = 7.92

91.26

Net Pay: 457.65 - 91.26 = $366.39

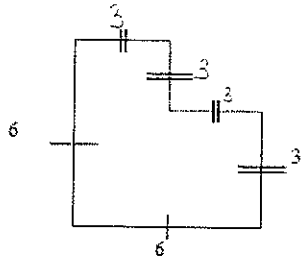
Chapter 3 – Length, Area & Volume Year-End Review

1. Perimeter

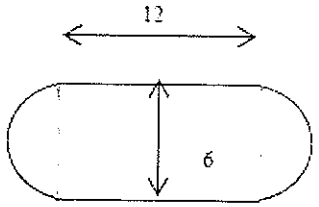
Perimeter: the sum of the lengths of all the sides of a polygon (distance around an object).

Circumference: the measure of the perimeter of a circle. $C = \pi d$, $2\pi r$

Example 1 -- What is the perimeter of these figures?



24



$\pi(6) + 2(12)$

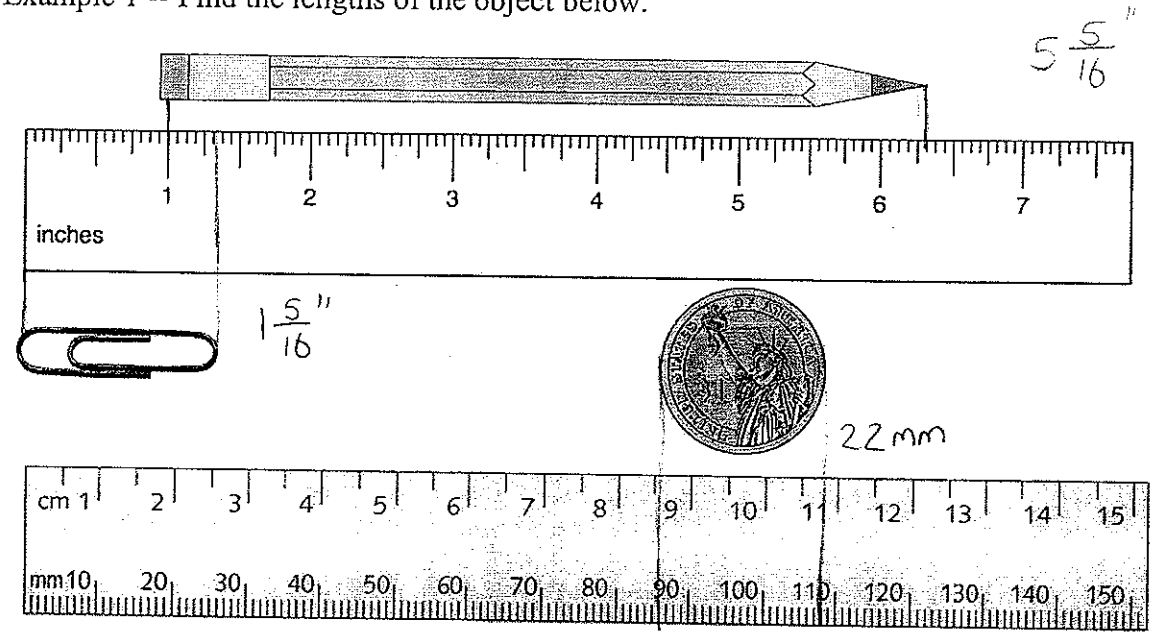
42.8

2. Systems of Measurement

Metric System (SI) uses the metre as the basic unit of length.

Imperial System uses the foot as the basic unit of length (commonly used in US).

Example 1 -- Find the lengths of the object below.



3. Converting Measurements

Example 1 -- Convert the following measurements (Round each to the nearest 100th):

a) 42 inches to feet

1 ft. = 12 in.

$42 \text{ in} \times \frac{1 \text{ feet}}{12 \text{ in}} = 3.5 \text{ feet}$

b) 16 inches to feet and inches

1'4"

c) 96 inches to yards

$96 \times \frac{1}{12} \times \frac{1}{3} = 2.67 \text{ yards}$

d) 5 miles to yards 1 mile = 1760 yards

$5 \text{ mi} \times \frac{1760 \text{ y}}{1 \text{ mi}} = 8800 \text{ yards}$

e) 75 mm to cm

$75 \text{ mm} \times \frac{1 \text{ cm}}{10 \text{ mm}} = 7.5 \text{ cm}$

f) 2.1 km to m

$2.1 \text{ km} \times \frac{1000 \text{ m}}{1 \text{ km}} = 2100 \text{ m}$

g) $5\frac{7}{8}$ inches to cm 1 inch = 2.54 cm

$5.875 \times \frac{2.54}{1} = 14.92 \text{ cm}$

h) 2600 km to miles 1 mile = 1.6 km

$2600 \times \frac{1}{1.6} = 1625 \text{ miles}$

Example 2 -- What is the total thickness of a wall made from $\frac{5}{8}$ in thick drywall nailed to a $\frac{3}{4}$ in stud over a $3\frac{1}{2}$ in thick insulation? (answer in fraction form)

$\frac{5}{8} + \frac{3}{4} + 3\frac{1}{2} = 4\frac{7}{8}$ or $\frac{39}{8}$"

Example 3 -- Anna is tying ribbon around 100 wedding invitation cards. Each card is 3.5 inches wide. She needs 7 inches per card. The ribbon comes in rolls that are 4 feet 1 inches long. How many rolls of ribbon does she need?

49 inches

100 x 7 = 700 in. needed

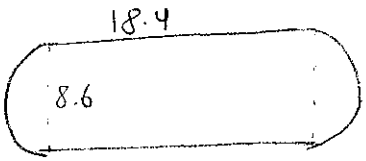
700 ÷ 49 = 14.29

↳ 15 rolls

4. Area

Example 1 -- A garden is to designed with a rectangular part in the middle with two semi-circles on the ends. The dimensions of the rectangular portion are 18.4 feet long and 8.6 feet wide.

a) What is the area of one semi-circle at one end?



$A = \frac{\pi r^2}{2} = \frac{\pi (4.3)^2}{2} = 29.0\ ft^2$

b) What is the area of the garden?

$A_{\square} = 18.4 \times 8.6 \leftarrow 158.24$

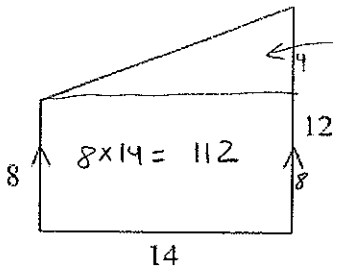
$+ 2(29.04) \leftarrow 58.08$

$216.32\ ft^2$

c) Find the area in square metres. $1\ foot = 0.305m$

$216.32\ ft^2 \times \left(\frac{0.305\ m}{1\ ft}\right)^2 = 20.159\ sq.m.$

Example 2 -- Andrew has a field in the following shape. Determine the area.



$\frac{14 \times 4}{2} = 28$

$28 + 112 = 140$

Example 3 -- Carpet costs \$2.75/m^2. What is the cost to carpet an area measuring 6m by 1.5m?

A. \$222.75
B. \$29.45
C. \$24.75
D. \$3.27

$6 \times 1.5 = 9\ m^2$

$\times 2.75$

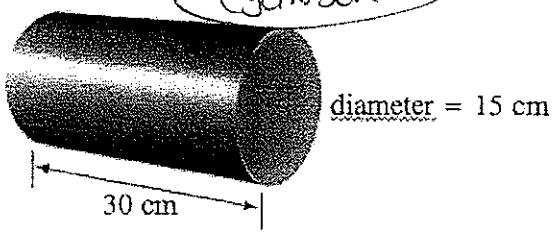
Cost

5. Surface Area

Surface area is the area that would be covered by a 3-D object if you could lay it out flat.

Example 1 -- Calculate the surface area of the following 3-D objects. Use π on your calculator for all calculations. Answer to the nearest 100^{th}.

CYLINDER



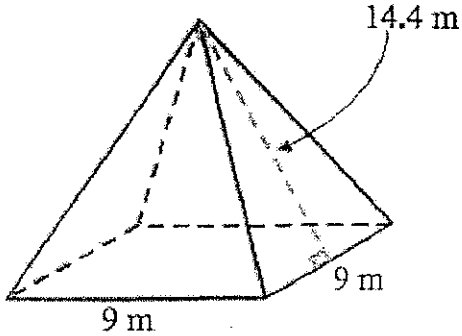
$SA = 2\pi r^2 + 2\pi rh$

$= 2\pi(7.5)^2 + 2\pi(7.5)(30)$

$= 353.43 + 1413.72$

$= 1767.15\ cm^2$

Sq-based Pyramid



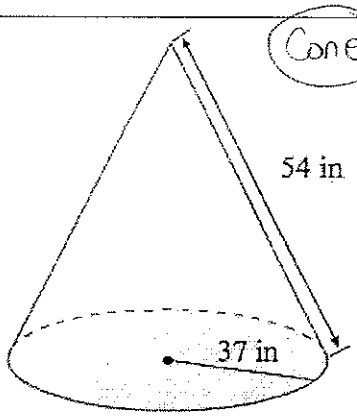
$SA = 2bs + b^2$

$= 2(9)(14.4) + 9^2$

$= 259.2 + 81$

$= 340.2\ m^2$

Cone



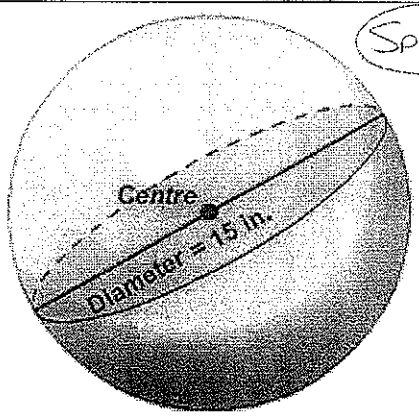
$SA = \pi r^2 + \pi rs$

$= \pi(37)^2 + \pi(37)(54)$

$= 4300.84 + 6276.90$

$= 10577.74\ in^2$

Sphere



$SA = \pi d^2$

$= \pi(15)^2 = 706.86\ in^2$

no bottom !!

Example 2 -- Sheet metal costs \$54.25/yd^2. How much will it cost Hamish to cover a conical roof if it has a radius of 2.2 yards and a slant height of 3.5 yards?

$SA = \pi rs$

$= \pi(2.2)(3.5) = 24.19\ yd^2$

$\times 54.25$

Cost = \$1312.32

6. Volume

Volume of solid is a measure of how much space it occupies.

Example 1 -- A fish tank is a rectangular prism that is 30 inches long, 24 inches deep, and 18 inches high. How much water will it hold:

a) in cubic inches?

$V = l \times w \times h$

$= 30 \times 24 \times 18$

$= 12960 \text{ in}^3$

b) in cubic feet? $12960 \text{ in}^3 \times \left(\frac{1 \text{ ft}}{12 \text{ in}}\right)^3$

1 ft. = 12 in.

$12960 \times \frac{1}{1728} = 7.5 \text{ ft}^3$

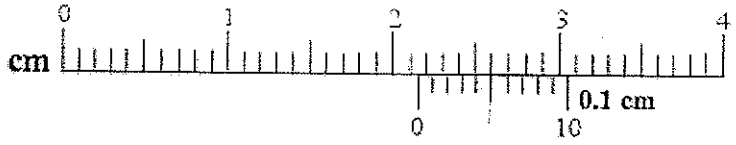
Example 2 -- How many British gallons are equivalent to 35 US Gallons?

$1 \text{ B.G.} = \frac{6}{5} \text{ US gallon}$

$35 \text{ USG} \times \frac{1 \text{ B.G.}}{1.2 \text{ USG}} = 29.2 \text{ B.G.}$

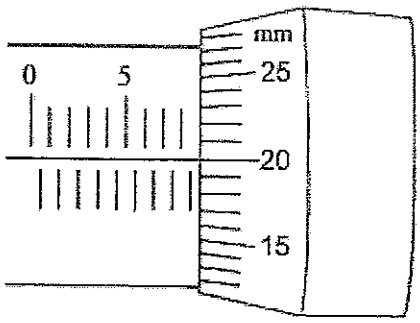
Example 3 -- Aleah measured an object with her vernier caliper. Determine the measurement.

21.50 mm



2.15 cm

Example 4 -- What is the measurement shown on the micrometer?



$8.5 + 20$

8.70 mm

$C = \frac{5}{9}(F-32)$

$9C = 5(F-32)$

$\frac{9C}{5} = F-32$

$F = \frac{9}{5}C+32$

Chapter 4 – Mass, Temperature, and Volume

1. Temperature Conversions

$C = \frac{5}{9}(F-32)$ (Given)	$F = \frac{9}{5}C+32$ (not Given)

Example 1 -- Convert the following temperatures to degrees Fahrenheit.

a) 35°C

$F = \frac{9}{5}(35)+32$

95

b) -8°C

$F = \frac{9}{5}(-8)+32$

$17.6 \rightarrow 18$

Example 2 -- Convert the following temperatures to degrees Celsius.

a) 375°F

$C = \frac{5}{9}(375-32)$

191

b) 0°F

$C = \frac{5}{9}(0-32)$

-18

Example 3 -- Which is hotter: a blowtorch flame at 1300°C or a candle flame at 1830°F? By how much is one flame hotter than the other in each scale?

$C = \frac{5}{9}(1830-32)$

999°C

blowtorch is hotter by 301°C

2. Mass/Weight/Volume

Remember

Memorize

1 pound (lb) = 16 ounces (oz)	1 ton (tn) = 2000 pounds

Example 1 -- Convert the following (Round each to the nearest 10th):

a) 24 oz into lb

$24 \times \frac{1\text{ lb}}{16} =$ 1.5 lb

b) 7420 lb into tn

$7420\text{ lb} \times \frac{1\text{ tn}}{2000\text{ lb}} =$ 3.71 tn

c) 6 lb 2 oz into oz

$6 \times 16 = 96$

$+2$

98 oz

d) 47 kg to pounds

$47\text{ kg} \times \frac{2.2\text{ lb}}{1\text{ kg}} =$ 103.4 lb

Omit

Example 2 -- The area of a picture is 2322 mm². Express this area in cm²

$2322\text{ mm}^2 \times \left(\frac{1\text{ cm}}{10\text{ mm}}\right)^2 = 2322 \times \frac{1}{100} =$ 23.22 cm²

Example 3 -- A 12-ounce can of vegetables costs $1.49. A 1 lb 2-oz can of the same vegetables costs $2.19. Which is the better buy? ↳ 16+2 = 18 oz

①	②
$\frac{1.49}{12} = \$0.12$	$\frac{2.19}{18} = \$0.12$

SAME PRICE

Example 4 -- A bakery uses a recipe for oatmeal cookies that calls for 1 lb 4 oz of flour to make 9 dozen cookies. How many ounces of flour are needed to make 3 dozen cookies? → 16+4 = 20 oz

$$\frac{\text{Amt. Flour}}{\text{Cookies}}: \frac{20}{9} = \frac{x}{3}$$

$x = 6.7$ oz

Example 5 -- What is the true cost per pound of a 10-pound box of oranges if the original price of the box was $12.99 and $\frac{1}{4}$ of them had to be thrown away because they were mouldy?

$\frac{1}{4}$ of 10 = 2.5

10 − 2.5 = 7.5 lb

TRUE COST: $\frac{12.99}{7.5}$ → $1.73/pound

MAY SKIP

Example 6 -- If a 10-lb bag of grass seed costs $75.45, how much does the seed cost per kilogram?

$$\frac{15.45}{10} = \frac{\$7.55}{1\text{lb}} \times \frac{2.2\text{lb}}{1\text{kg}} = \$16.6/\text{kg}$$

MAY SKIP

Example 7 -- When Dale was building his fish pond, he needed a truck to carry away the soil and rocks that he dug from the hole. The hole was 2.4 m by 1.9 m by 1.6 m. The weight of the soil and rocks averages 112 pounds per cubic foot. (Use: 1 m = 3.3 ft)

a) What will be the weight, in pounds, of the soil and rocks dug out for the fish pond? $V = 2.4 \times 1.9 \times 1.6 = 7.30\ m^3 \times \left(\frac{3.3\ ft}{1\ m}\right)^3 = 262.20\ ft^3$

$\times 112$

29365.99 pounds

b) If the truck can carry 2.4 tonnes, how many trips must Dale make?

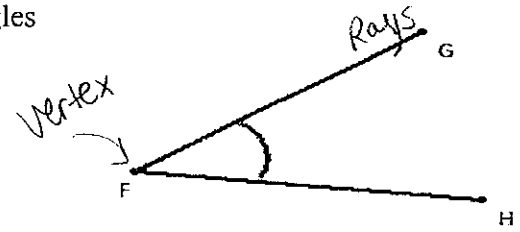
$29365.99\ \text{lbs} \times \frac{1\ \text{ton}}{2000\ \text{lbs}} = 14.68$ tonnes

$\div 2.4$

6.12 → 7 trips

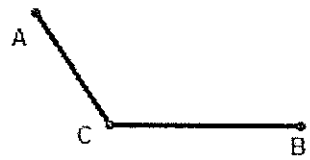
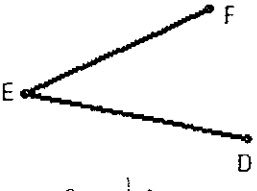
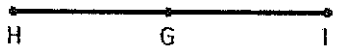
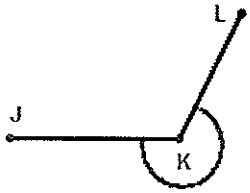
Chapter 5 – Angles and Parallel Lines

Parts of Angles

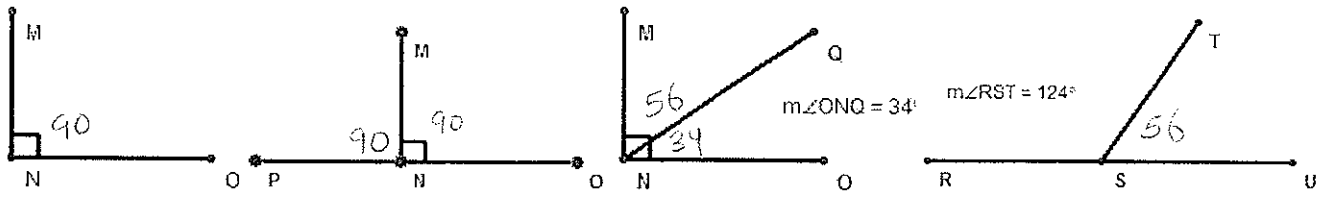


∠GFH

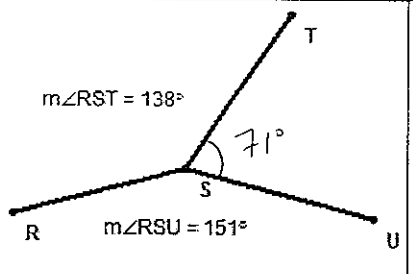
1. Label the Angles, Name them and give their definition

 Obtuse >90, <180	 Acute	 Straight	 reflex

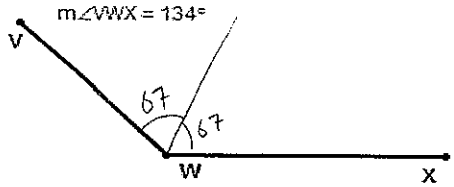
Angle Relationships

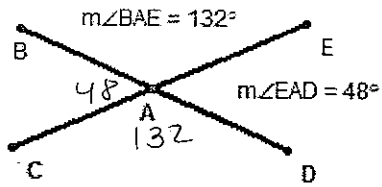


cuts angle in half



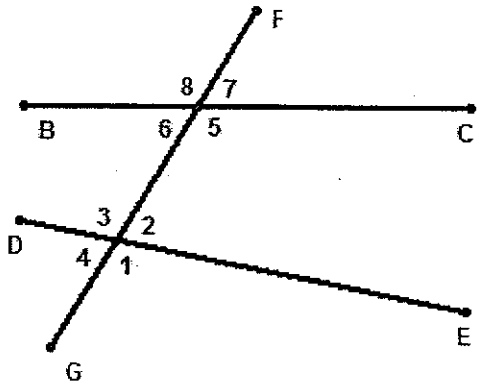
Draw a bisector, and find the measurement





Parallel Lines and Transversals.

Is $BC \square DE$? NO!!



What angles are corresponding? Are they equal? NO!
∠3 & ∠8, ∠4 & ∠6, ∠2 & ∠7, ∠1 & ∠5

What angles are Alternate Interior? Are they equal?
Z

What angles are Alternate Exterior? Are they equal?
∠1 & ∠8

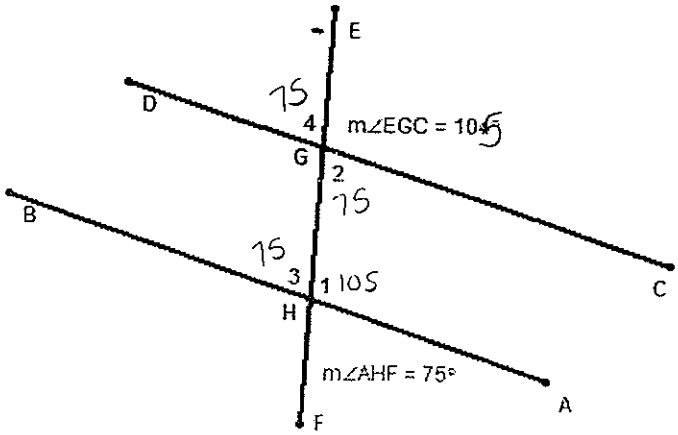
What angles are Interior (**ISST**)? Do they add to 180°?
∠2 & ∠5

Parallel lines have:

Corresponding angles that are equal

Alternate Interior angles that are equal

Interior angles that add to 180°

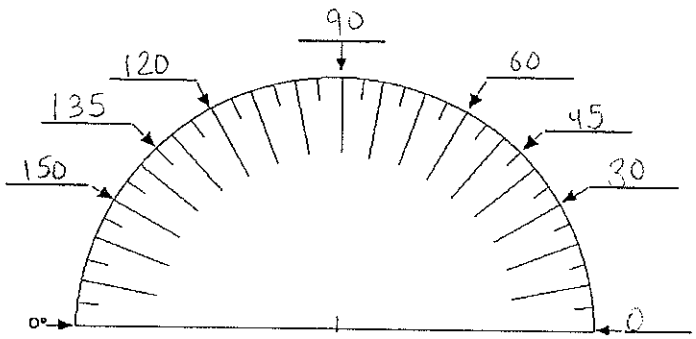


Find Angle 1 in the diagram to the right.

Is $AB \square CD$? YES!

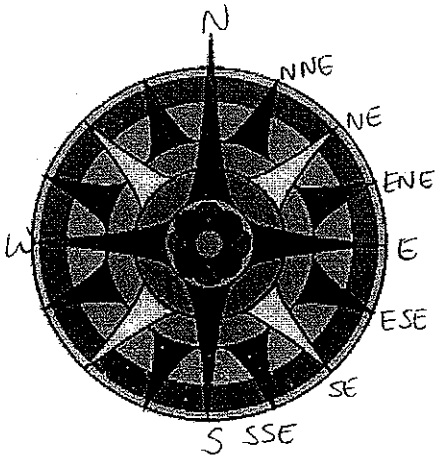
Find the rest of the missing angels.

Label the following Protractor with the common angles.

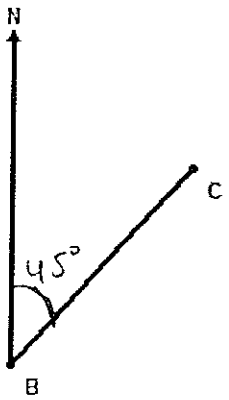


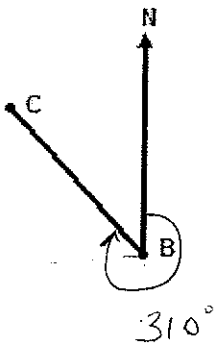
Draw an angle of 135° on the line segment.

Label the four cardinal directions on the following compass rose.
Then label the 12 intermediate directions.



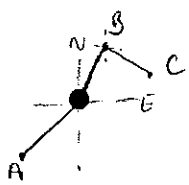
What is the true bearing between B and C?





270
45
310

From the dot, place an "A" 1 cm SW.
From the dot, place a "B" 1 cm NNE.
From B, place a "C" 1 cm ESE.



* Supplementary ∠s add to 180
Complementary ∠ add to 90

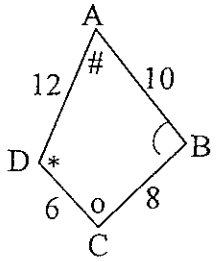
Chapter 6: Similarity of Figures

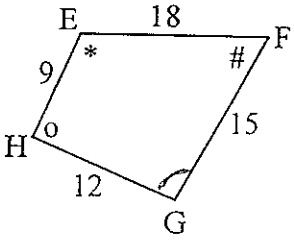
1. Similar Polygons.

In order for any two polygons to be similar they must have both:

-equal corresponding angles

-equal corresponding side ratios





Corresponding angles:	Corresponding sides:
$\angle A = \angle F$	$\frac{AB}{GF} = \frac{10}{15} = \frac{2}{3}$ $\quad \frac{CD}{EH} = \frac{6}{9} = \frac{2}{3}$
$\angle B = \angle G$	$\frac{BC}{GH} = \frac{8}{12} = \frac{2}{3}$ $\quad \frac{AD}{EF} = \frac{12}{18} = \frac{2}{3}$
$\angle C = \angle H$	Scale Factor = 2:3 → 1:1.5
$\angle D = \angle E$	Note: We could have chosen the other figure as the numerator in the sides ratio.

If the figures are similar we write it in the math sentence:

ABCD ~ EFGH

used as a multiplier for scaling from 1 figure to other

2. Similar Triangles

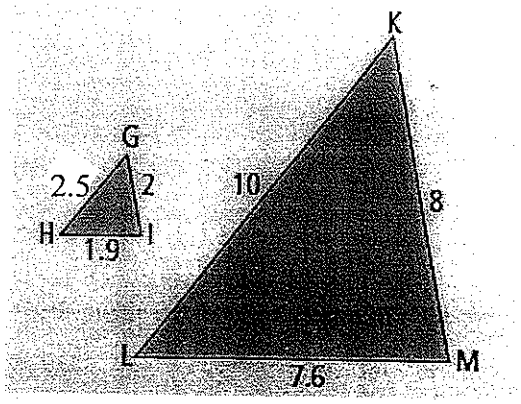
Triangles only have 3 sides so their construction is limited.

Therefore, in order to have 2 similar triangles only ***one*** of the following is needed:

-equal corresponding angles

OR

-equal corresponding side ratios

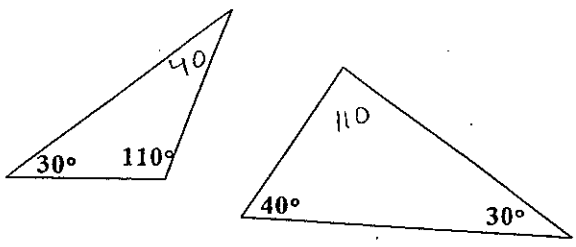


Corresponding sides:	Corresponding angles:
$\frac{KL}{GH} = \frac{10}{2.5} = 4$ $\quad \frac{ML}{HI} = \frac{7.6}{1.9} = 4$	$\angle K = \angle G$
$\frac{KM}{GI} = \frac{8}{2} = 4$ Scale Factor = 4:1	$\angle L = \angle H$
Note: We could have chosen the other figure as the numerator in the sides ratio.	$\angle M = \angle I$
	=

All Triangles add up to 180 °. This allows us to subtract and find missing angles.

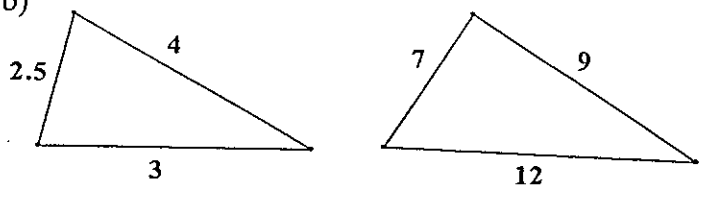
1. Determine if the following shapes are similar or not. You must support your decision with a **reason**.

a)



YES

b)

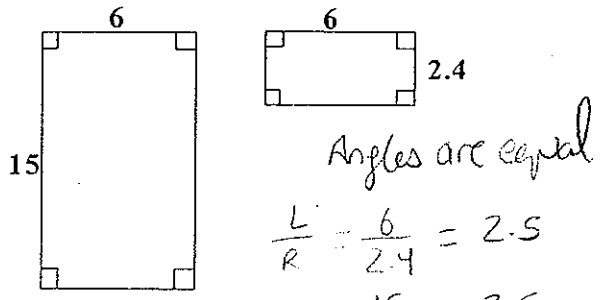


$\frac{L}{R} = \frac{4}{12} = \frac{1}{3} = 0.3\overline{3}$ NO!

$\frac{3}{9} = \frac{1}{3} = 0.3\overline{3}$

$\frac{2.5}{7} = 0.35$

c) Are they similar? Why or why not?



Angles are equal

$\frac{L}{R} = \frac{6}{2.4} = 2.5$

$\frac{15}{6} = 2.5$

YES

d) Solve the proportion. What is the Scale Factor?

$\frac{3}{4} = \frac{17}{y} = \frac{x}{8}$

0.75

$\frac{3}{4} = \frac{x}{8}$

$24 = 4x$

$x = 6$

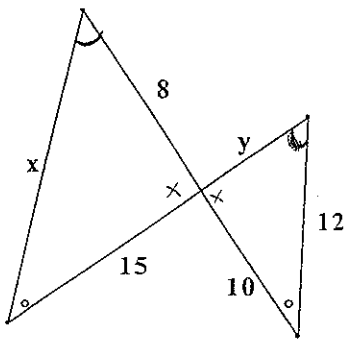
$\frac{3}{4} = \frac{17}{y}$

$3y = 68$

$y = 22.\overline{6}$

2. The following shapes are similar. Write the proportions and then solve for each unknown value.

a)



$\frac{x}{12} = \frac{8}{10} = \frac{15}{y}$

$\frac{x}{12} = \frac{8}{10}$

$10x = 96$

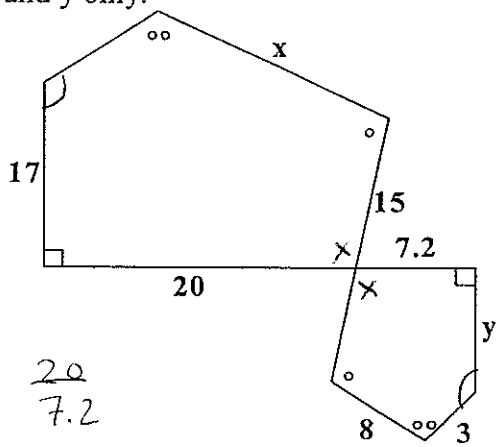
$x = 9.6$

$\frac{8}{10} = \frac{15}{y}$

$8y = 150$

$y = 18.75$

b) Find x and y only.

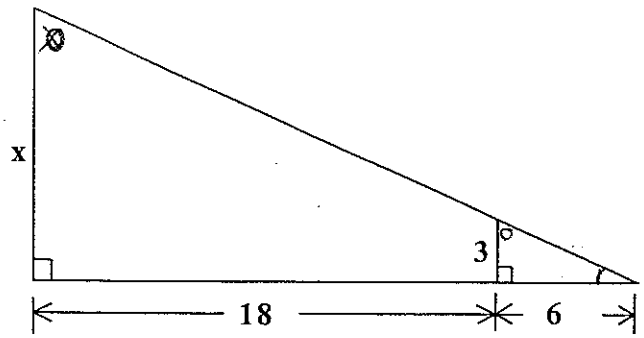


$\frac{17}{y} = \frac{20}{7.2}$

$y = 6.12$

$\frac{x}{8} = \frac{20}{7.2}$

$x = 22.\overline{2}$

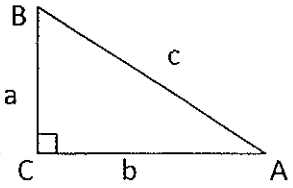


$\frac{x}{3} = \frac{24}{6}$

$x = 12$

Chapter 7 – Trigonometry of Right Triangles

PYTHAGOREAN THEOREM



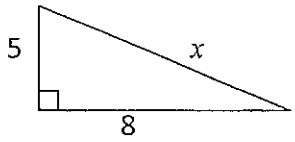
$a^2 + b^2 = c^2$

legs (intersect to form 90° corner)

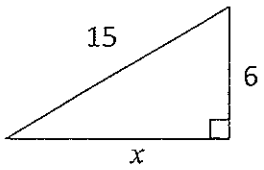
hypotenuse (longest side)

1) **Calculate the length of the unknown side, x**

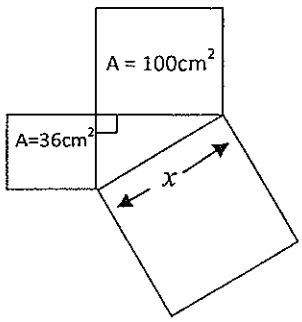
a)



b)

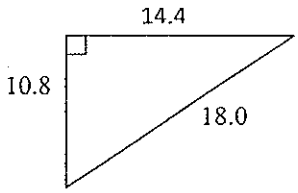


c)

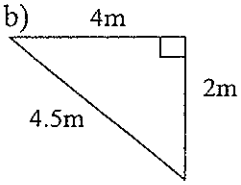


2) <u>Is each triangle below a right triangle</u>?

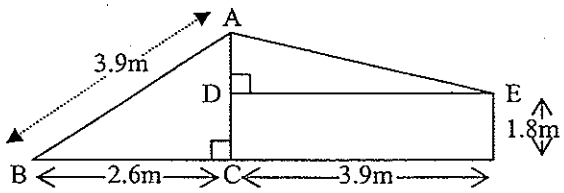
a)



b)



3) The roof of a shed is in need of repair. Measurements are required so materials can be ordered.



a) What is the total height of the peak, AC?

b) How long is the right side of the roof, AE?

TRIGONOMETRY

SOH CAH TOA

1) <u>Find each trig ratio to 4 decimal places</u>

a) tan 28° = _____

b) cos 47° = _____

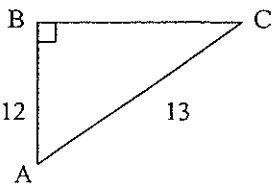
c) sin 82° = _____

2) Find each angle (nearest whole #

a) If $\tan A = 4.1875$, $\angle A =$ _____

b) If $\cos C = \frac{13}{15}$, $\angle C =$ _____

3) Identify the correct trig ratio and find $\angle A$



Tan A =

Sin A =

Cos A =

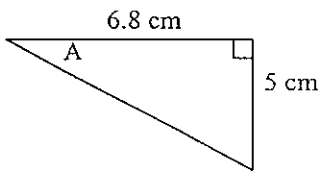
$\angle A =$

4) Draw a triangle to represent the trig ratio, tan A = 5/8

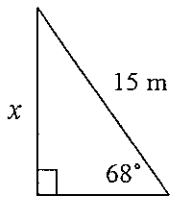
5) Identify the trig ratio and solve for the angle or side

ANGLES = $\tan^{-1}$, $\cos^{-1}$, $\sin^{-1}$
SIDES = Cross multiply

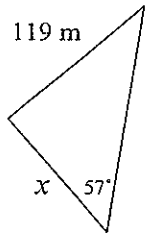
a)



b)

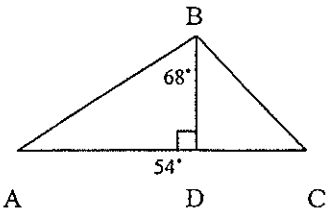


c)

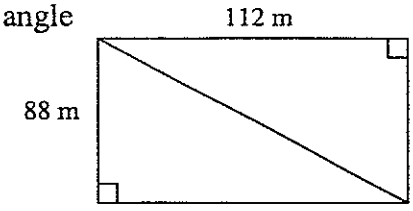


B. **Working with More than one Triangle (in the same plane)**

1a) Determine the length of AC, to the nearest mm, in the diagram if DC = 28mm, $\angle BCD = 54°$, and $\angle ABD = 68°$

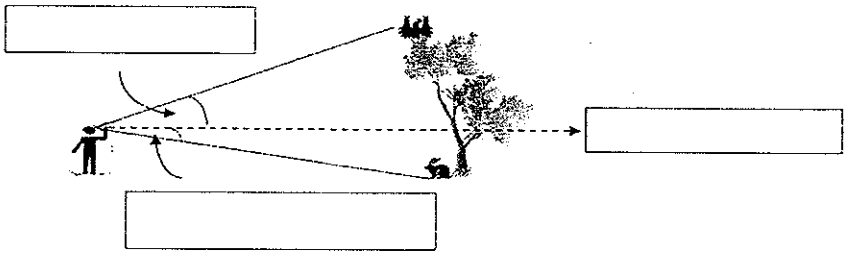


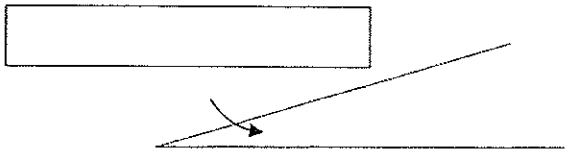
2a) Find the length of the diagonal and the value of the larger acute angle



b) Perimeter of triangle = _____

D. TRIGONOMETRY APPLICATIONS





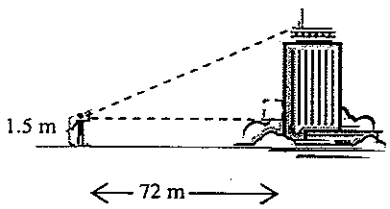
How much an object, like a ramp, rises up from the ground, or horizontal.

EXAMPLES:

1. Scott measures the angle of depression to a boat to be 32°. If he is standing on top of a 60m cliff and is 1.6m tall, how far away is the boat from Scott?

2. According to the American National Standards Institute (ANSI), the angle of elevation that provides the best slip resistance for ladders is 75°. If a 12 ft ladder is resting against a wall at this angle, how far up the wall does the ladder reach?

3. The chairlift at a ski resort has a vertical rise of 2600 ft. If the length of the ride is 1.6 miles, what is the average angle of inclination of the lift, to the nearest tenth of a degree? (1 mile = 5480 feet)

4. A student measures the angle of elevation of a building to be 37°.

   If the student is 1.5m tall, use the information in the diagram to calculate the height of the building