MYP Math 9 - Standard Level

Finals Day

1. Unit 4: Radicals & Special Rights (8 pts)
   *Opportunity to improve Quiz 4.1 score

2. Semester 1 Final Exam (8 pts)
   *32 questions Multiple Choice
   (8 from each unit)

*Unit 1 Linear
*Unit 2 Coordinate Geometry
*Unit 3 Similarity & Trigonometry
*Unit 4 Radicals, Special Rights, Transformations

ADVISORY BELL SCHEDULE (w/3 lunches)

Lunch A		
1st Hour	8:05-8:48	43 minutes
2nd Hour	8:53-9:36	43 minutes
Advisory	9:41-10:25	44 minutes
3rd Hour	10:30-11:13	43 minutes
Lunch A	11:18-11:48	30 minutes
4th Hour (Late)	11:53-12:36	43 minutes
5th Hour (Late)	12:41-1:24	43 minutes
6th Hour	1:29-2:12	43 minutes
7th Hour	2:17-3:00	43 minutes

Lunch B		
1st Hour	8:05-8:48	43 minutes
2nd Hour	8:53-9:36	43 minutes
Advisory	9:41-10:25	44 minutes
3rd Hour	10:30-11:13	43 minutes
4th Hour (Early)	11:18-12:01	43 minutes
Lunch B	12:06-12:36	30 minutes
5th Hour (Late)	12:41-1:24	43 minutes
6th Hour	1:29-2:12	43 minutes
7th Hour	2:17-3:00	43 minutes

Lunch C		
1st Hour	8:05-8:48	43 minutes
2nd Hour	8:53-9:36	43 minutes
Advisory	9:41-10:25	44 minutes
3rd Hour	10:30-11:13	43 minutes
4th Hour (Early)	11:18-12:01	43 minutes
5th Hour (Early)	12:06-12:49	43 minutes
Lunch C	12:54-1:24	30 minutes
6th Hour	1:29-2:12	43 minutes
7th Hour	2:17-3:00	43 minutes

Final's schedule:

FIRST SEMESTER / SECOND QUARTER FINALS
2017-18
SPECIAL Bell Schedule

Tuesday, January 23, 2018

- Four Period day.
- Lunch with period 3 teacher.
- One hour, 25 minute classes

Period 1: Study Hall	8:05-9:30
Period 2	9:40-11:05
Period 3	11:15-1:10*
**Lunch to be determined*	
Period 4	1:20-2:45

Wednesday, January 24, 2018

- Four Period day.
- Lunch with period 6 teacher.
- One hour, 25 minute classes

Period 1: Finals	8:05-9:30
Period 5	9:40-11:05
Period 6	11:15-1:10*
**Lunch to be determined*	
Period 7	1:20-2:45

MYP Math 9 - Standard Level

Class Plan:

1. Talk about Final's schedule

2. Warm-ups

3. Review: Study & Work Together!

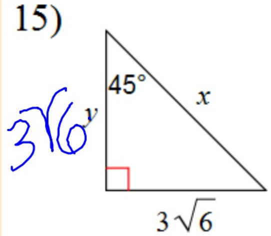
Unit 4: Radicals & Special Right Triangles

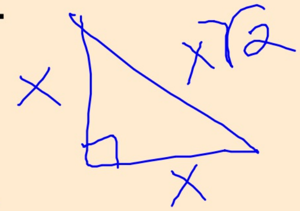
Unit 3: Similarity & trig

Warm-up: (Unit 4 Review Sheet)

Solve for the unknown side lengths. Leave answer in simplest radical form.

15)





$X = 3\sqrt{6} \cdot \sqrt{2}$

$x = 3\sqrt{12}$

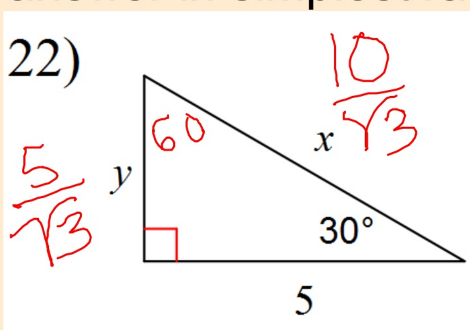
$= 3\sqrt{4 \cdot 3}$

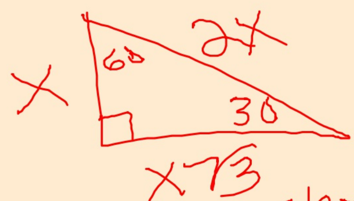
$= 3 \cdot 2 \cdot \sqrt{3}$

$\boxed{X = 6\sqrt{3}}$

Warm-up: (Unit 4 Review Sheet)

Solve for the unknown side lengths. Leave answer in simplest radical form.





short leg

$$\frac{5}{\sqrt{3}} = \frac{x\cdot\sqrt{3}}{\sqrt{3}} \qquad \boxed{x = \frac{5}{\sqrt{3}}}$$

Warm-up: (Unit 4 Review Sheet)

Square #'s: 1,4,9,16,25,36,49,64,81

Simplify.

9) $\sqrt{50}$

$= \sqrt{25 \cdot 2}$

$= \sqrt{25} \cdot \sqrt{2}$

$= \boxed{5\sqrt{2}}$

Warm-up: (Unit 4 Review Sheet)

Square #'s: 1,4,9,16,25,36,49,64,81

Simplify.

10) $\sqrt{12}$

Warm-up: (Unit 4 Review Sheet)

Square #'s: 1,4,9,16,25,36,49,64,81

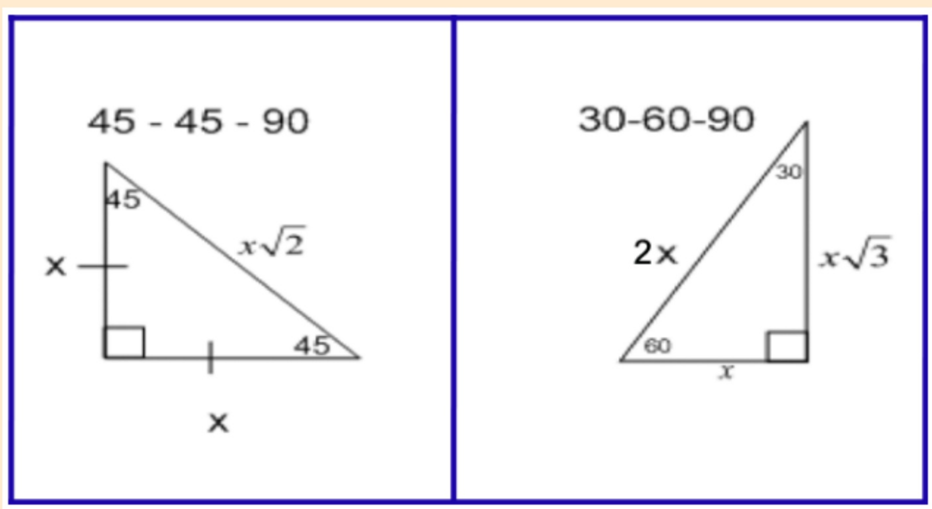
8 $\dfrac{\sqrt{16}}{3\sqrt{4}} = \dfrac{4}{3\cdot 2} = \dfrac{4}{6} = \boxed{\dfrac{2}{3}}$

3 $\sqrt{3}\cdot -5\sqrt{2} = \boxed{-5\sqrt{6}}$

4 $\sqrt{5}\cdot -3\sqrt{5} = -3\cdot 5 = \boxed{-15}$

*Unit 4 Radicals/Special Right Triangles

Special Right Triangles



B NOTES SIMPLIFYING RADICALS

Properties

- $\sqrt{a}\sqrt{a} = \left(\sqrt{a}\right)^2 = a$
- $\sqrt{a}\sqrt{b} = \sqrt{ab}$
- $\dfrac{\sqrt{a}}{\sqrt{b}} = \sqrt{\dfrac{a}{b}}$

Examples

$$\sqrt{278} \cdot \sqrt{278} = 278$$

$$\sqrt{8}\sqrt{32} = \sqrt{256} = 16$$

$$\frac{\sqrt{100}}{\sqrt{4}} = \sqrt{\frac{100}{4}} = \sqrt{25} = 5$$

C NOTES SIMPLEST RADICAL FORM

Simplest Radical Form:

Number under $\sqrt{}$ is the smallest possible integer.

To get into **simplest form**:

1) Factor out perfect squares.

Square Roots

$\sqrt{1} = 1$	$\sqrt{36} = 6$	$\sqrt{121} = 11$
$\sqrt{4} = 2$	$\sqrt{49} = 7$	$\sqrt{144} = 12$
$\sqrt{9} = 3$	$\sqrt{64} = 8$	$\sqrt{169} = 13$
$\sqrt{16} = 4$	$\sqrt{81} = 9$	$\sqrt{196} = 14$
$\sqrt{25} = 5$	$\sqrt{100} = 10$	$\sqrt{225} = 15$

Example 7 | **Self Tutor**

Write $\sqrt{8}$ in simplest form.

$\sqrt{4 \cdot 2}$

$\cancel{\sqrt{4}}\sqrt{2}$

$2\sqrt{2}$

Square Roots

$\sqrt{1} = 1$	$\sqrt{36} = 6$	$\sqrt{121} = 11$
$\sqrt{4} = 2$	$\sqrt{49} = 7$	$\sqrt{144} = 12$
$\sqrt{9} = 3$	$\sqrt{64} = 8$	$\sqrt{169} = 13$
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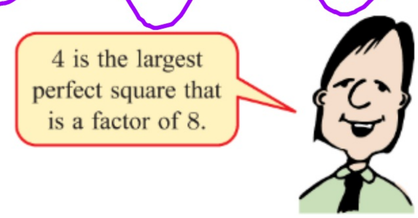
$\sqrt{25} = 5$	$\sqrt{100} = 10$	$\sqrt{225} = 15$



To Simplify a Radical:

1) Factor out perfect squares.

Example: Write in simplest form.

$$\sqrt{75}$$

$$\sqrt{25\cdot 3}$$

$$\sqrt{25}\sqrt{3}$$

$$5\sqrt{3}$$

Square Roots

$\sqrt{1} = 1$	$\sqrt{36} = 6$	$\sqrt{121} = 11$
$\sqrt{4} = 2$	$\sqrt{49} = 7$	$\sqrt{144} = 12$
$\sqrt{9} = 3$	$\sqrt{64} = 8$	$\sqrt{169} = 13$
$\sqrt{16} = 4$	$\sqrt{81} = 9$	$\sqrt{196} = 14$
$\sqrt{25} = 5$	$\sqrt{100} = 10$	$\sqrt{225} = 15$

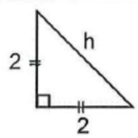
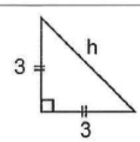
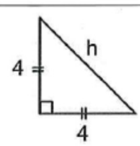
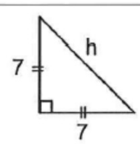
1, 4, 9, 16, 25. . . .

Hi

To Simplify a Radical:

1) Factor out perfect squares.

Investigation: Special Right Triangles
Solutions

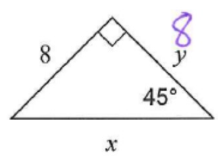
Isosceles Right Triangle	Show your work to find ***h***.
 	$2^2+2^2=h^2$ $4+4=h^2$ $8=h^2$ $h=\sqrt{8}$ $\boxed{h=2\sqrt{2}}$
 	$3^2+3^2=h^2$ $9+9=h^2$ $18=h^2$ $h=\sqrt{18}$ $h=\sqrt{9\cdot 2}$ $\boxed{h=3\sqrt{2}}$
 	$4^2+4^2=h^2$ $16+16=h^2$ $32=h^2$ $h=\sqrt{32}$ $h=\sqrt{16\cdot 2}$ $\boxed{h=4\sqrt{2}}$
 	$7^2+7^2=h^2$ $49+49=h^2$ $98=h^2$ $h=\sqrt{98}$ $\sqrt{2}$ $\sqrt{49}$ $\sqrt{7}\cdot\sqrt{7}$ $\boxed{7\sqrt{2}}$

Investigation: Special Right Triangles

Solutions

Step 3: Practice! Use your relationship from the front page!

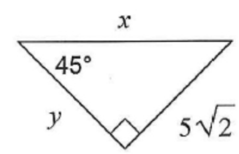
1) Find the length of ***x*** and ***y***.



$y = 8$

$x = 8\sqrt{2}$

2) Find the length of ***x*** and ***y***.



$y = 5\sqrt{2}$

$x = 5\sqrt{2} \cdot \sqrt{2}$

$x = 5 \cdot 2$

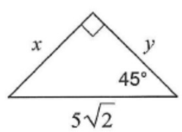
$\boxed{x = 10}$

Investigation: Special Right Triangles

Solutions

Use the hypotenuse and the 45-45-90 rule to find the legs.

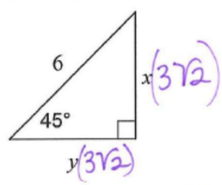
3) Find the length of ***x*** and ***y*.**



$$x = y = \frac{5\sqrt{2}}{\sqrt{2}}$$

$$\boxed{x = y = 5}$$

4) **Challenge**



$x = y$

$$\frac{6}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$$

$$x = \frac{6}{\sqrt{2}}$$

$$x = \frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{2}$$

$$x = 3\sqrt{2}$$

Investigation: Special Right Triangles

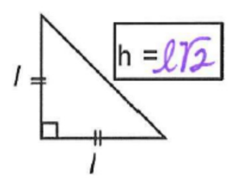
Solutions

Step 2: Generalize the patterns you observed in step 1.

a) Use the lengths of the legs of an isosceles triangle to find the hypotenuse – WITHOUT USING THE PYTHAGOREAN THEOREM!

Leg length	5	6	11	123,456
Hypotenuse length	$5\sqrt{2}$	$6\sqrt{2}$	$11\sqrt{2}$	$123456\sqrt{2}$

b) Suppose the length of the legs is ***l***. What is the hypotenuse? $l\sqrt{2}$
Try to complete the triangle using this relationship.

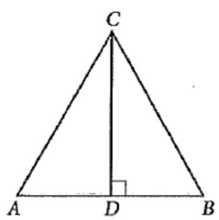


Investigation: Special Right Triangles

Solutions

Right Triangle: (30° - 60° - 90°)

(Part 1): ΔABC is equilateral.



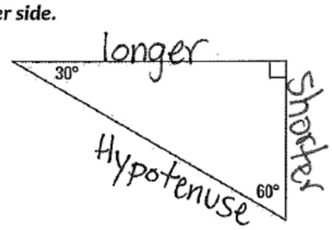
How are AC and AD related? (*Consider the warm-up)

$AC = 2AD$

OR

$AD = \frac{1}{2}AC$

(Part 2) Directions: Label each side of the 30° - 60° - 90° triangle with **hypotenuse, longer side,** and **shorter side.**



1) How do we know which side is **"longer"**?

Longer side is OPPOSITE the 60° angle

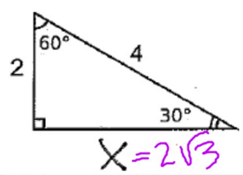
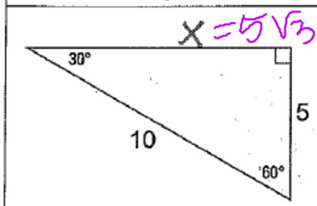
2) How do we know which side is **"shorter"**?

Shorter side is OPPOSITE the 30° angle

Investigation: Special Right Triangles

Solutions

(Part 3) Directions: Using the relationship between the shorter leg and the hypotenuse, find the longer leg using the Pythagorean Theorem. LEAVE ANSWERS IN EXACT RADICAL FORM.

30° - 60° - 90° Triangle	Show your work to find the ***longer leg.***
 	$2^2 + x^2 = 4^2$ $4 + x^2 = 16$ $x^2 = 12$ $x = \sqrt{12}$ $x = \sqrt{4 \cdot 3}$ $\boxed{x = 2\sqrt{3}}$
 	$5^2 + x^2 = 10^2$ $25 + x^2 = 100$ $x^2 = 75$ $x = \sqrt{75}$ $x = \sqrt{25 \cdot 3}$ $\boxed{x = 5\sqrt{3}}$

Investigation: Special Right Triangles

Solutions

(Part 5) Generalize:

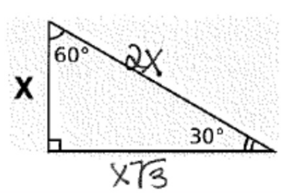
a) What is the relationship between the ***shorter*** leg and the ***hypotenuse***?

Shorter is half the hypotenuse (Hyp = 2·short)

b) What is the relationship between the ***shorter*** leg and the ***longer leg***?

Longer leg is the shorter times √3. (Long = √3·short)

c) Given the **shorter leg is X,** show the relationships of the **30° - 60° - 90°** triangle in the triangle below.

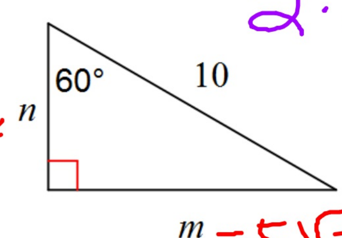


Solve for the missing side lengths.
Use simplest radical form.

1)

2·short

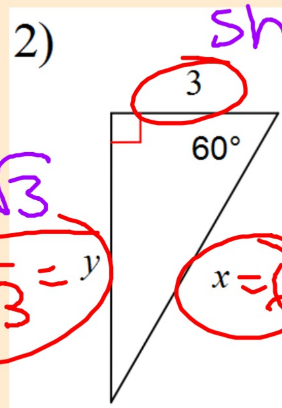
short side 5 =



$= 5\sqrt{3}$

short$\cdot\sqrt{3}$

Solve for the missing side lengths.
Use simplest radical form.



short

short $\cdot \sqrt{3}$

$3\sqrt{3} = y$

$x = 6$

2 · short

$2 \cdot 3 = 6$

Exercises...

Review Unit 4

You can do it!!!