Grade 8 NOTES **Unit 1: Sample problems** **Name:_____ Class:____**

<u>Unit 1 POWERS</u> $7^2 = 49$
Base 7
Exponent 2
Perfect square 49
Power 7^2

Ex. 1.1 Given: $9^2 = 81$
Base _____
Exponent _____
Perfect square_____
Power _____

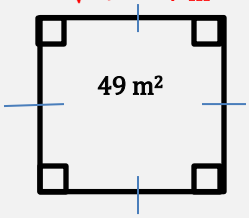
Ex 2.

$\sqrt{\ }$ *means* sidelength of a square

AREA is inside the square

$(7\ m)^2 = 49$ INVERSE $\sqrt{49} = 7$ m

$\sqrt{49} = 7$ m



Ex 2.1

What is the inverse of $(12\ m)^2 = 144$?

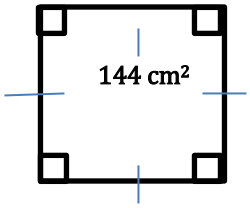
_____

Ex 2.2.

If $\sqrt{36} = 6$ *then the inverse is*

_____

Ex 2.3 What is the side length?_____



Ex. 3

$\sqrt{8100} = 90$
$\sqrt{640000} = 800$
$\sqrt{17}^2 = 17$
$\sqrt{8^2} = 8$

Ex 3.1

$\sqrt{14400} =$ _____
$\sqrt{250000} =$ _____
$\sqrt{23}^2 =$ _____
$\sqrt{11^2} =$ _____

Ex. 4

$8^2 =$ _____

$\sqrt{81} =$_____

$\sqrt{80} \doteq$_____

Ex. 4.1

$10^2 =$ _____

$\sqrt{9} =$_____

$\sqrt{28} \doteq$_____

4^2 = _____

$\sqrt{19}^2$ = _____

$\sqrt{1}$ = _____

$\sqrt{26}$ ≐ _____

$\sqrt{13 \times 13}$ = _____

1^2 = _____

$\sqrt{9}^2$ = _____

$\sqrt{49}$ = _____

$\sqrt{64}$ ≐ _____

Ex. 5

Put in ascending order:

$12^2, \sqrt{64}, \sqrt{80}, 3^2, \sqrt{7}^2, \sqrt{1}, \sqrt{52}$

___,___,___,___,___,___,___, ___

Ex. 5.1

Put in ascending order:

$11^2, \sqrt{25}, \sqrt{102}, 4^2, \sqrt{6}^2, \sqrt{1}, \sqrt{48}$

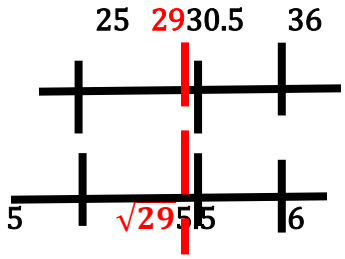
___,___,___,___,___,___,___, ___

Ex. 6

Estimate $\sqrt{29}$

P.S.

$\sqrt{}$



$\sqrt{29}$ ≐ 5.4

Ex. 6.1

Estimate $\sqrt{66}$

Ex. 7 Model using the method indicated to show if the number is or is not a perfect square.

7.1 using square tile , is 25 a perfect square?

7.2 Using square tiles is 18 a perfect square?

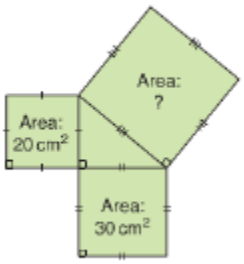
7.3 Using Prime Factorization method, is 36 a perfect square?

7.4 Using Prime Factorization, is 28 a perfect square?

7.5 Using List of Factors Method, is 24 a perfect square?

7.6 Using List of Factors Method, is 16 a perfect square?

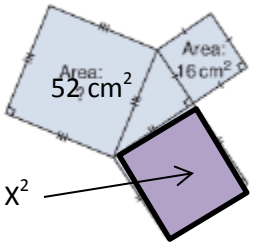
8. Pythagorean Theorem



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

$x^2 = 20 + 30$

$\boxed{x^2 = 50}$



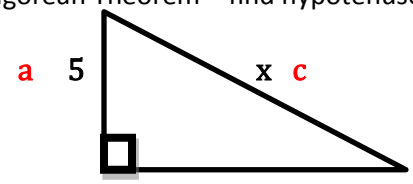
$c^2 = a^2 + b^2$

$52 = x^2 + 16$

$52\text{-}16 = x^2$

$\boxed{x^2 = 50}$

Ex. 9 Pythagorean Theorem – find hypotenuse



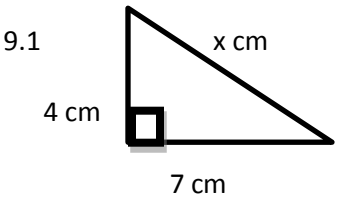
11 b

$$c^2 = a^2 + b^2$$
$$x^2 = 5^2 + 11^2$$
$$x^2 = 25 + 121$$
$$x^2 = 146$$
$$\sqrt{x^2} = \sqrt{146}$$
$$x = 12.08305\cdots$$
$$x \triangleq 12.1$$

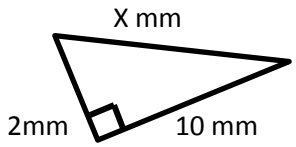
rounded to nearest tenth

Find the missing side. If necessary, round nearest tenth

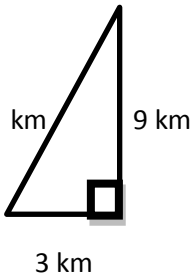
9.1



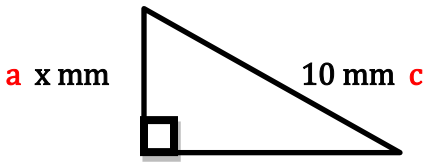
9.2



9.3



Ex. 10 Pythagorean Theorem – find leg



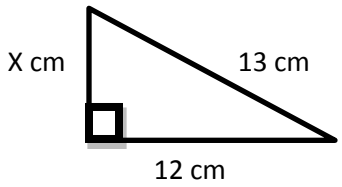
8 mm b

$$c^2 = a^2 + b^2$$
$$10^2 = x^2 + 8^2$$
$$100 = x^2 + 64$$
$$100 - 64 = x^2$$
$$x^2 = 36$$
$$\sqrt{x^2} = \sqrt{36}$$
$$x = 6\ mm$$

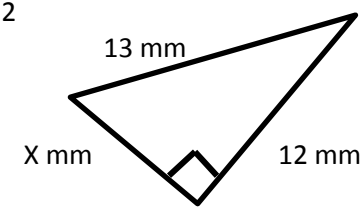
UNITS : mm, cm, m , km …

Find the missing side. If necessary, round nearest tenth

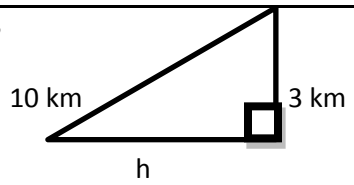
10.1



10.2



10.3



Ex. 11 **WORD Problems**

11.1 A 5 m ladder is leaning on a house to the bottom of a window . The bottom of the ladder is 2m away from the bottom of the house. How high is the window above the ground. Round to nearest tenth.

DIAGRAM SOLUTION

Ex. 11.2 Two cats leave the same spot on a fence.
One cat travels 3 km south, the other 4 km west. How far apart are the cats? Round to nearest tenth.

DIAGRAM SOLUTION

11.3
A bird house is 3m up a tree. A 5 m ladder is leaning up to the bird house. How far is the bottom of the ladder to the bottom of the tree. Round to nearest tenth.

DIAGRAM SOLUTION

11.4 A triangular flower bed has two paths perpendicular to each other. One of them is 5 m; the other is 8 m. What is the perimeter of the flower bed?

DIAGRAM SOLUTION

12. Terms

_____ has only two factors , 1 and itself and the factors are different.

_____ has more than two factors.

The$\sqrt{\ }$ symbol means _____ of a square.

12. Terms (con'd)

The E in BEDMAS means _____ are completed before division, multiplication, addition and subtraction.

_____ means from smallest to biggest.

_____ means from biggest to smallest.