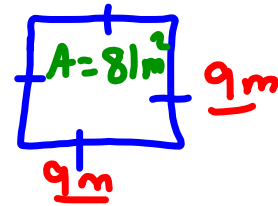




Warm Up  
Feb. 5, 2024

Grade 8

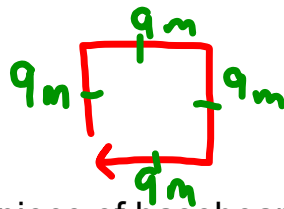


A square room has area of  $81 \text{ m}^2$

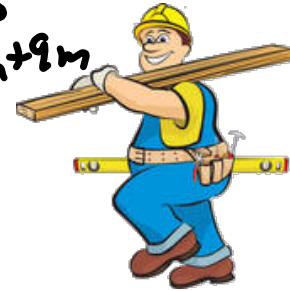
a) Find the length of a side of the room

$$\text{Side} = 9 \text{ m}$$

b) How much base board is needed to go around the whole room?



$$\begin{aligned} P &= S + S + S + S \\ &= 9\text{m} + 9\text{m} + 9\text{m} + 9\text{m} \\ &= 36\text{m} \end{aligned}$$



c) Each piece of baseboard is 1.5 m long. How many pieces of baseboard are needed

$$36\text{m} \div 1.5\text{m}$$

$$= 24$$

It will take 24 pieces.

Side	Area LxW		Perfect sq #
1	1x1	$\Rightarrow$	1
2	2x2	$\Rightarrow$	4
3	3x3	$\Rightarrow$	9
4	4x4	=	16

Area  $\Rightarrow$  12

1 x 12  Rec

2 x 6  Rec

3 x 4  Rec

12 is Not a perfect Sq #



**Solution** Warm Up  
Oct. 27, 2014

Grade 8

A square room has area of  $81 \text{ m}^2$

a) Find the length of a side of the room

$$\begin{aligned} \text{Area} &= 81 \text{ m}^2 \\ &= 9 \times 9 \\ \text{Side} &= 9\text{m} \end{aligned}$$

b) How much base board is needed to go around the whole room?

$$\begin{aligned} P &= 9 \text{ m} + 9 \text{ m} + 9 \text{ m} + 9 \text{ m} \\ &= 36 \text{ m} \end{aligned}$$



c) Each piece of baseboard is 1.5 m long. How many pieces of baseboard are needed

pieces

$1.5 \text{ m} \times 10 = 15 \text{ m}$	$1.5\text{m} \times 24 = 36$ $1.5\text{m} \times 25 = 37.5$ $1.5\text{m} \times 26 = 39$
$1.5 \text{ m} \times 20 = 30 \text{ m}$	
$1.5 \text{ m} \times 30 = 45 \text{ m}$	

*Handwritten notes: 'up by 15' in purple, 'up by 15' in green, 'up by 1.5' in green.*

or

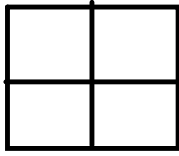
$$\begin{array}{r} 24 \\ 1.5 \overline{)36} \\ \underline{30} \phantom{0} \\ 60 \\ \underline{60} \\ 0 \end{array}$$

long division

Need 24 pieces

pg 8

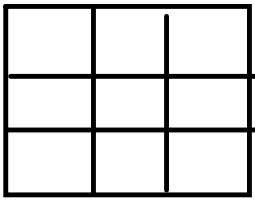
4 a)



$$2 \times 2 = 4 \text{ square units}$$

b)   $1 \times 1 = 1 \text{ square unit}$

c)



$$3 \times 3 = 9 \text{ square units}$$

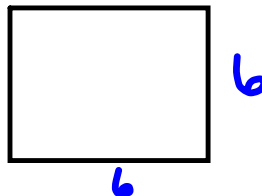
5 a)  $A = l \times w$   
 $= 8 \times 8$   
 $= 64 \text{ units}^2$

b)  $A = l \times w$   
 $= 10 \times 10$   
 $= 100 \text{ units}^2$

c)  $A = l \times w$   
 $= 3 \times 3$   
 $= 9 \text{ units}^2$

Area	Length	Width
36	1	36
	2	18
	3	12
	4	9
	6	6

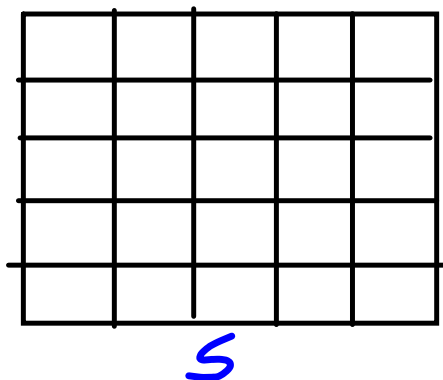
Yes, 36 is a perfect square  
 $6 \times 6 = 36$



7. Area	Length	Width
28	1	28
	2	14
	4	7

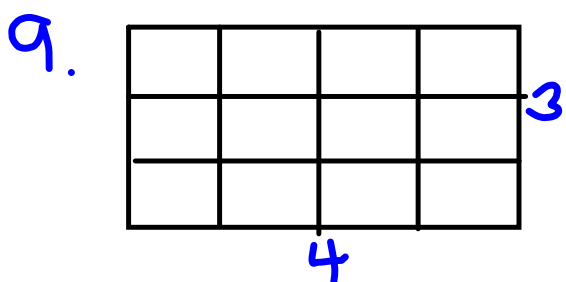
No 28 is not a perfect square, there is no number that you can multiply twice (by itself) to get 28.

### 8. 25 - Perfect Square



$$5 \times 5 = 25$$

25 is a perfect square that has a side length of 5.



Not a square, the sides are not the same.

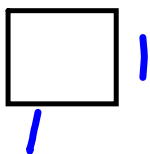
No factors the same

$$\begin{array}{l} 1 \times 12 \\ 2 \times 6 \\ 3 \times 4 \end{array}$$

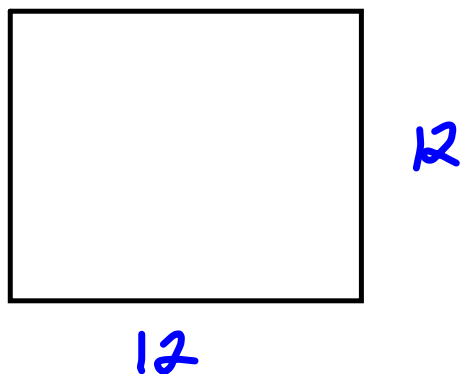
$$\begin{array}{l} 3 \times 3 = 9 \\ 4 \times 4 = 16 \end{array}$$

No whole numbers that multiply by itself will give 12.

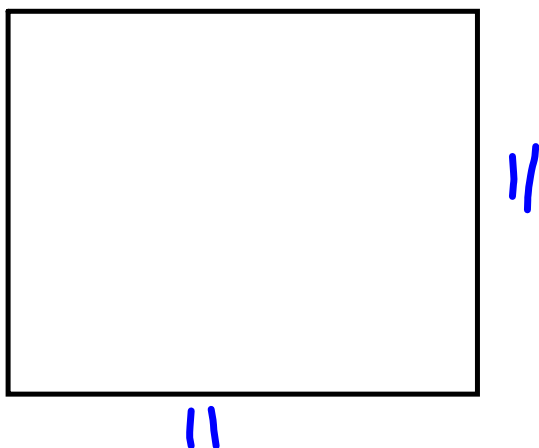
10. a) 1



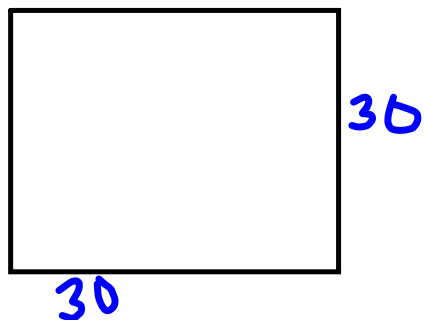
b) 144



c) 121



d) 900



$$11 \text{ Area} = 100 \text{ m}^2$$



$$10 \times 10 = 100$$

so side length  
= 10m

$$b) \text{ Area} = 64 \text{ cm}^2$$

$$8 \times 8 = 64$$

so side length = 8cm

$$c) \text{ Area} = 81 \text{ m}^2$$

$$9 \times 9 = 81$$

so side length = 9m

$$d) \text{ Area} = 400 \text{ cm}^2$$

$$20 \times 20 = 400$$

so side length = 20cm.

2a) 10 → not perfect square  
 $3 \times 3 = 9$  ,  $4 \times 4 = 16$

b) 50 → not perfect square  
 there is no number that you  
 can multiply by itself to get 50.

c) 81 - Perfect Square  
 $9 \times 9 = 81$

d) 20 - not a perfect square  
 $4 \times 4 = 16$        $5 \times 5 = 25$



Write out the factors for each number below

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
→	1	1	2																											
→	1	1	2	4																										
→	1	1	2	3	6																									
→	1	1	2	4	8																									
→	1	1	3	9																										
→	1	1	2	3	4	6	12																							
→	1	1	2	7	14																									
→	1	1	2	3	5	15																								
→	1	1	2	4	8	4																								
→	1	1	2	3	6	3	6																							
→	1	1	2	10	4	5																								
→	1	1	2	3	7	5																								
→	1	1	2	11																										
→	1	1	2	3	4	6	8	4	6																					
→	1	1	2	5	12	3	8	4	6																					
→	1	1	2	13																										
→	1	1	2	3	9																									
→	1	1	2	14	4	7																								
→	1	1	2	15	3	10	5	6																						

Discuss Factors, have students complete factor sheet 1- 30

1	1							
2	1	2						
3	1	3						
4	1	2	4					
5	1	5						
6	1	2	3	6				
7	1	7						
8	1	2	4	8				
9	1	3	9					
10	1	2	5	10				
11	1	11						
12	1	2	3	4	6	12		
13	1	13						
14	1	2	7	14				
15	1	3	5	15				
16	1	2	4	8	16			
17	1	17						
18	1	2	3	6	9	18		
19	1	19						
20	1	2	4	5	10	20		
21	1	3	7	21				
22	1	2	11	22				
23	1	23						
24	1	2	3	4	6	8	12	24
25	1	5	25					
26	1	2	13	26				
27	1	3	9	27				
28	1	2	4	7	14	28		
29	1	29						
30	1	2	3	5	6	10	15	30

Discuss a number having an odd number of factors.

Any number with an odd number of factors will be a perfect square.

## Section 1.2

# Squares and Square Roots



Discuss a number having an odd number of factors.

\* Any number with an odd number of factors will be a perfect square.

Ex) The factors of 136 are listed below:

1, 2, 4, 8, 17, 34, 68, 136

Is 136 a square number? How do you know?

136



There  
are  
8 factors

↓  
even # of  
factors

Means 136  
is NOT Perfect

(Perfect square)

Square number: a PRODUCT of a number multiplied by itself

25 is a square number since  $5 \times 5 = 25$

$$A =$$

area of the square

Square root: a number that when it is multiplied by itself produces a perfect square



- This is the symbol for square root.

6 is the square root of 36

$$\sqrt{36} = 6$$

side length



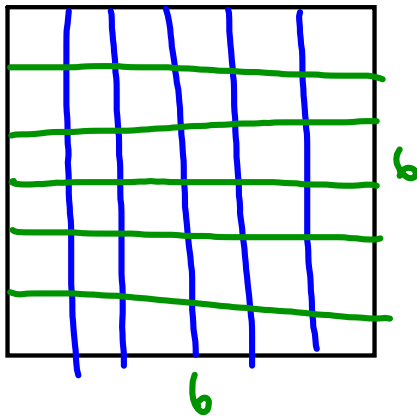
Square Roots -  $\sqrt{\quad}$

Area

Draw a square with the following little squares inside it:

- (a) 36    (b) 9  $\Rightarrow 3 \times 3$     (c) 4    (d) 64

perfect Squ #



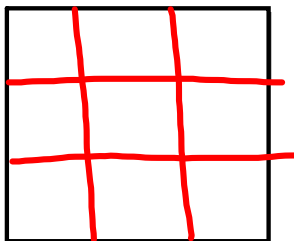
36 is perfect square

$6 \times 6 = 36$

so side length = 6

I can also say

$\sqrt{36} = 6$

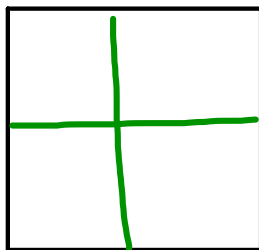


9 is a perfect square

$3 \times 3 = 9$

Side length = 3

so  $\sqrt{9} = 3$

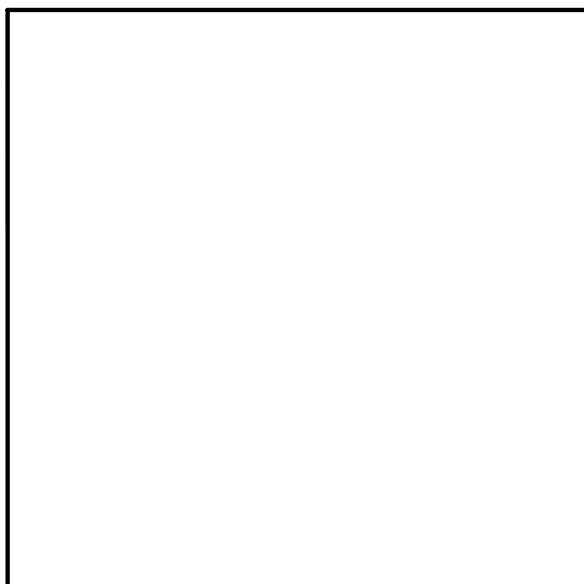


4 is a perfect square

$2 \times 2 = 4$

side length = 2

So  $\sqrt{4} = 2$



64 is a perfect square

$8 \times 8 = 64$

side length = 8

so  $\sqrt{64} = 8$

Add to notes

$$\sqrt{x^2} = x \quad \text{or} \quad (\sqrt{x})^2 = x$$

Evaluate

$$\text{ex) } \sqrt{7^2} = \sqrt{49} \quad \text{ex) } (\sqrt{11})^2 = 11$$

$\Rightarrow = 7$

$$\text{ex) } \sqrt{929^2} = 929 \quad \left\{ \begin{array}{l} \sqrt{43^2} = 43 \end{array} \right.$$

# Class/Homework

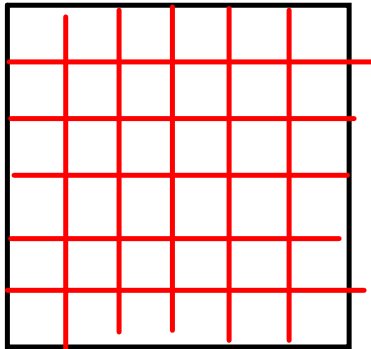
page. 14



6(a,b,c,d),	11(a,b),
7(a,b,c,d),	12(i),
8(a,)	14,
10(a),	15

Then Finish Page 8 from last day

Page 8→4, 5, 11ad, 12ad, 15ad, 16abc





pg 19 Square each number  
 5a)  $4^2 = 4 \times 4 = 16$

$$6a) 8^2 = 8 \times 8 = 64$$

7. Find square root  
 a)  $\sqrt{25} = 5$

8 Square

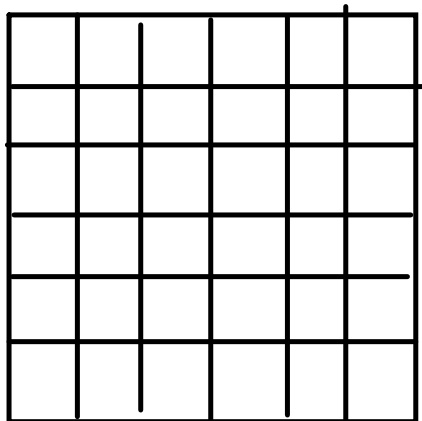
a)  $12^2$

b)  $10^2$

c)  $100^2$

d)  $1000^2$

9 a)  $\frac{50}{1 \times 50}$   
 $2 \times 25$   
 $5 \times 10$   
 1, 2, 5, 10, 25, 50



400

1 x 400

2 x 200

4 x 100

5 x 80

8 x 50

10 x 40

20 x 20

$$\begin{array}{r} \underline{256} \\ 1 \times 256 \\ 2 \times 128 \\ 4 \times 64 \\ 8 \times 32 \\ 16 \times 16 \end{array}$$

1, 2, 4, 8, 16, 32, 64, 128, 256