Grade 8 Math In–Class Assignment Unit 1
Squares and Square Roots
Sections 1.1 – 1.4

Name: _____

Selected Response. Place the letter of the best response in the blank to the left. [10 marks]

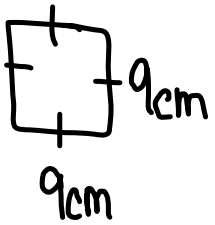
_____ 1. Which number is a perfect square?

(A) 8
(B) 16
(C) 24
(D) 50

16 is a perfect square since 4 times itself is 16.
$4 \times 4 = 16$

_____ 2. The length of one side of a square is 9 cm. What is the area of the square, in cm^2?

(A) 3
(B) 18
(C) 36
(D) 81



$\text{Area}_{\text{square}} = (\text{side length})^2$
$= 9^2$
$= 9 \times 9$
$= 81 cm^2$

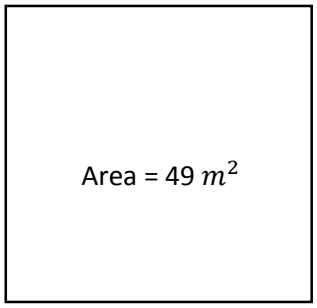
_____ 3. What is the square root of 9?

(A) 3
(B) 4.5
(C) 18
(D) 81

$\sqrt{9} = 3$

_____ 4. What is the length of one side of the square below?

(A) 7 m
(B) 24.5 m
(C) 28 m
(D) 98 m



$\text{Side length} = \sqrt{\text{Area}}$
$= \sqrt{49}$
$= 7m$

_____ 5. What is the square of 4?

(A) 2
(B) 8
(C) 16
(D) 32

$4^2 = 4 \times 4 = 16$

_____ 6. What is $\sqrt{64}$?

(A) 4
(B) 8
(C) 32
(D) 128

$\sqrt{64} = 8$

_____ 7. What is the square root of 15^2?

(A) 7.5
(B) 15
(C) 30
(D) 225

$\sqrt{15^2} = 15$

$\sqrt{15^2} = \sqrt{15 \times 15}$
$= \sqrt{225}$
$= 15$

_____ 8. The factors of 4 different numbers are listed below. Which number is a perfect square?

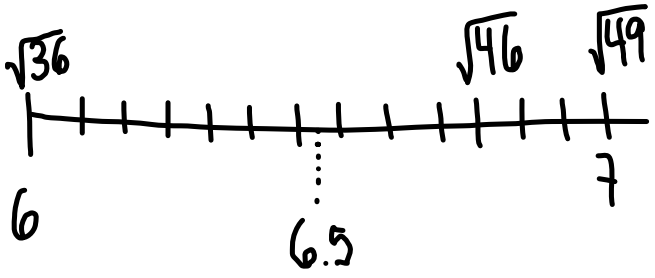
(A) {1, 2, 3, 4, 6, 12}
(B) {1, 2, 4, 8, 16, 32}
(C) {1, 2, 4, 8, 16, 32, 64}
(D) {1, 2, 4, 5, 8, 10, 16, 20, 40, 80}

A perfect square has an odd # of factors.

_____ 9. Which is the best estimate of $\sqrt{46}$?

(A) 6.1
(B) 6.7
(C) 7.2
(D) 7.8

$\sqrt{36} = 6$ $\sqrt{49} = 7$



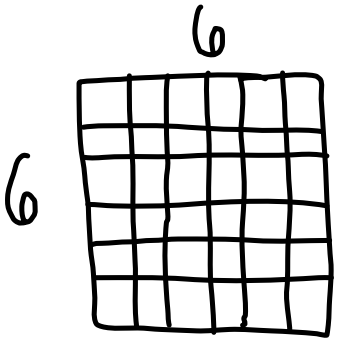
_____ 10. Between which 2 consecutive whole numbers is $\sqrt{71}$

(A) 6 and 7
(B) 7 and 8
(C) 8 and 9
(D) 9 and 10

$\sqrt{64} = 8$ $\sqrt{81} = 9$

Section 2 – Show all workings.

11. Use a diagram to show why 36 is a perfect square. [2 marks]



36 is a perfect square with side length of 6.

12. Solve: [6 marks]

A. $\sqrt{36} = 6$ B. $\sqrt{121} = 11$ C. $\sqrt{1} = 1$

C. $5^2 = 5 \times 5 = 25$ D. $12^2 = 12 \times 12 = 144$ F. $\sqrt{3^2} = \sqrt{3 \times 3} = \sqrt{9} = 3$

13. Identify a whole number that has a square root between 4 and 5. Explain how you got your answer. [2 marks]

$(4)^2 = 16$

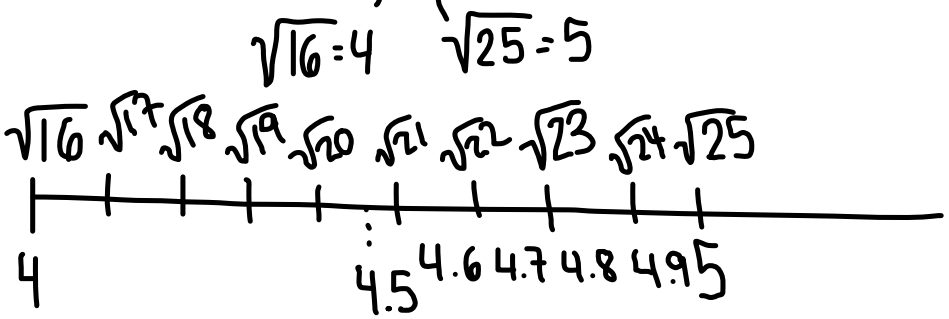
$(5)^2 = 25$

So any # between 16 and 25 will have a square root between 4 and 5.

Sample Answer is 20.
Since $\sqrt{20} = 4.5$, which is between 4 and 5.

14. Estimate $\sqrt{23}$ to one decimal place. Explain your answer. [2 marks]

$\sqrt{16}=4$ $\sqrt{25}=5$



$\sqrt{23} \approx 4.8$

15. Order from least to greatest. Show all workings. [2 marks]

$\sqrt{25}$, 4, $\sqrt{49}$, 3

5 7

3, 4, $\sqrt{25}$, $\sqrt{49}$

16. A large square classroom has an area of $169\ m^2$.

A. What is the length of one side? [2 marks]

Side length = $\sqrt{\text{Area}}$

$= \sqrt{169}$

$= 13m$

B. What is the perimeter of the room? [1 mark]

Perimeter = 4 x side length

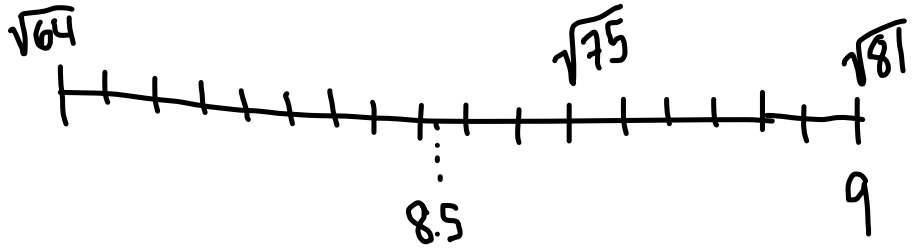
$= 4 \times 13$

$= 52\ m$

17. John estimated the square root of 75 to be 8.3. Jill estimated the square root of 75 to be 8.7. Who had the better estimate? Explain. [3 marks]

$\sqrt{75}$

$\sqrt{64}=8$ $\sqrt{81}=9$



Jill had the better estimate because the square root of 75 is between 8.5 and 9.