**Grade 8 Math Test 1 Review**

***Testable Outcomes:***

* A1 - Students will be able to determine the perfect squares and square roots of whole numbers.
* A2 - Students will be able to determine the approximate square roots of non-perfect square whole numbers.
1. Find.
a) 82 = 16 b) 202 = 400 c) 92 = 81

d) 22 = 4 e) 112 = 121 f) 52 = 25
2. Find.
a) = 7 b) = 14 c) = 0

d) = 6 e) = 20 f) = 3
3. Using a diagram, explain why 16 is a perfect square number.

16 is a perfect square because it has 2 identical factors.

 In other words, since 4 x 4 = 16, a perfect square can be drawn with an area of

16 cm2

4 units uniunitsunits

4 units

1. The value of lies between which two consecutive whole numbers?

10 11

The value of is between 10 and 11.

1. The value of lies between which two consecutive whole numbers?

7 8

The value of is between 10 and 11.

1. The value of lies between which two consecutive whole numbers.

5 6

The value of is between 5 and 6.

1. Estimate the value of to one decimal place.

 6 7

The value of is between 6 and 7. (

There are 13 square roots (spaces) between 6 and 7.

 is the 4th of those 13 square roots (spaces), so is 4/13 of the way to 7.

 is 6 4/13. If we write as a decimal then it is 6.3

 (see Ms Maxwell’s brain on the right if you forget how to

convert fractions to decimals)

1. Use the number line below.



a) Which placements are good estimates of the square roots? Explain your reasoning.

b) Use the number line to estimate the value of each square root that is incorrectly placed.

 By listing the perfect square roots that lie on either side of we can see that it

 is closer to than to Since more than halfway to between these

 two square roots, it should be labelled much closer to

b) The actual value of 7 out of 9 spaces (square roots) between 4 and 5, the actual value is 4 7/9 or 4.8 to the nearest tenth.

 By listing the perfect square roots that lie on either side of we can see that it

is slightly closer to (5 spaces away) than to (6 spaces away). Since slightly less than halfway to between these two square roots, it should be labelled much closer to than it is now. Right now it is placed halfway, it should

 be slightly less than halfway.

 b) The actual value of is between the two whole number 5 and 6

 It is 5/11 of the way to 6. (5/11 as a decimal is 0.45...)

 So, is **5.4**

 By listing the perfect square roots that lie on either side of we can see that it

is much closer to (1 space away out 15 spaces) than to (14 spaces away). b) The actual value of 7 and 1/14 or 7.07 or **7.1** rounded off to the nearest tenth.

 a) 64 is a perfect square number. Its square root is 8 so therefore this placement

 is perfect!

 b) The square root of 64 is exactly 8!

 By listing the perfect square roots that lie on either side of we can see that it

is 8 square roots away from and 9 square roots away from . Since slightly less than halfway to between these two square roots, it should be labelled much closer to

 b) The square root of 72 is 8 8/17

 As a decimal, this is **8.5** to the nearest tenth.

 The placement of this arrow is quite accurate!

1. Arrange the following numbers least to greatest.

a) 13, 32, 6, , 7 32 = 9, 6, =11, 7 so 6, 7, 32 ,

b) , 8, 42, , = 15, 8, 42 = 16, , = 12 so 8, , ,

c) 202, 72, 42, 92, , 102 202 =400, 72, 42, 92 = 81, = 20, 102 = 100 so , 42, 72, 92, 102 , 202

d) 18, , 52, 18, = 14, 52 = 25, = 8 so , , 18, 52

1. Evaluate.
a) b)

 is 6 out of 23 square roots (spaces) between (which is 5)

 and (which is 6)

c) 72 (167) d) 42 ()

1. The wrestlers from the World Wrestling Entertainment (WWE) usually entertain their fans on a square mat with an area of 400 m2. What are the dimensions of the wrestling mat?

 20 m 400 m2

The mat is a perfect square so

will equal side length.

 = 20

The dimensions of the mat are 20 metres wide by 20 metres long.

1. John bought a bag of lawn fertilizer that will cover 144 square meters. What are the dimensions of the largest square plot of lawn that the bag of fertilizer will cover?

 12 m 144 m2

The lawn fertilizer will cover a square piece of lawn that is 12 metres long by 12 metres wide.

1. An electronic company uses three different sizes of square labels to ship products to customers. The area of each type of label is shown in the table below. Use this information to answer the following questions.

|  |  |
| --- | --- |
| **Type of Label** | **Area** |
| Priority | 100 cm2 |
| Caution | 225 cm2 |
| Address | 144 cm2 |

a) If the length of a square is the square root of the area, what is the length of a side for
 each label.

 Length of side of Priority label = Length of side = 10 cm

 Length of side of Caution label – Length of side = 15 cm

Length of side of Address label – Length of side = 12 cm

b) How much larger is the area of the Caution label than the area of the Address label?

Area of caution label – area of address label

 225 -144 WIFI !!! Oh yeah….

 81 cm2

 The caution label is 81 cm2 larger in area than the address label.

1. If the area of a square is 29 cm2, estimate the length of each side of the square to the nearest whole number.

Length of side of square =

 is 4 out of 11 square roots (spaces) between (which is 5)

 and (which is 6)

 is 5 4/11. As a decimal, is 5.4 cm (rounded to the nearest tenth