1.2 Squares and Square Roots – Notes

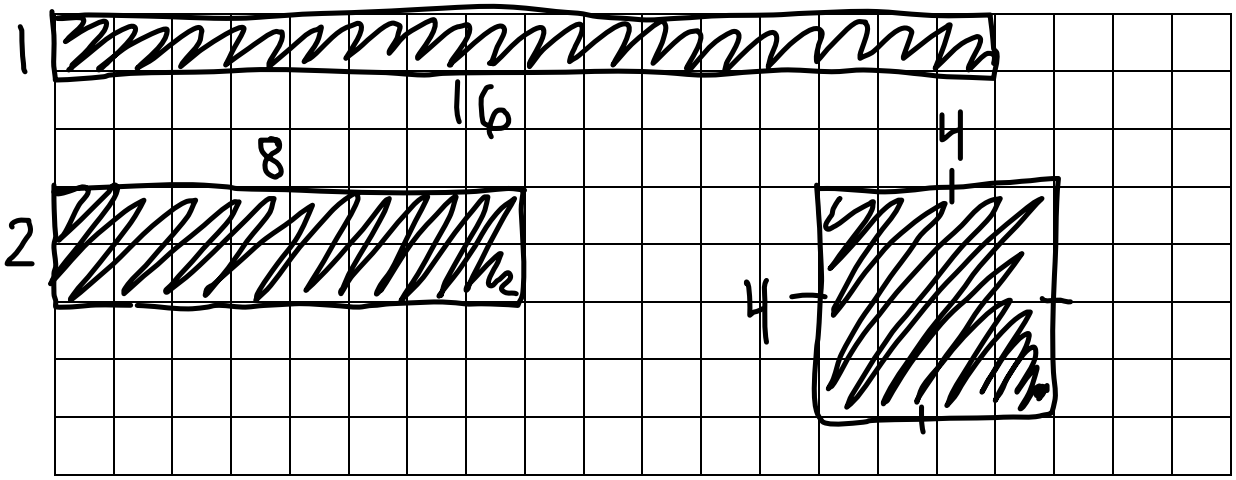
How can we determine if a number is a SQUARE NUMBER?

1. Find a division sentence for a number so that the quotient is equal to the divisor, the number is a square number.

$49 \div 7 = 7$ ← quotient

dividend divisor

2. We can also use factoring.
Factors of a number occur in pairs.
These are the dimensions of a rectangle.



Sixteen has 5 factors:

Since there is an odd number of factors, one rectangle is a Square.

The square has a side length of 4 units.

We say that 4 is a Square root of 16.

We write: $\sqrt{16} = 4$

When we multiply a number by itself, we Square the number.
Squaring and taking the square root are inverse operations That is, they undo each other.

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

$\sqrt{16} = \sqrt{4 \times 4} = \sqrt{4^2} = 4$

Examples:

1. Find the square of each number. → means multiply the # by itself

   a) $5^2 = 5 \times 5 = 25$

   b) $15^2 = 15 \times 15 = 225$

   c) $20^2 = 20 \times 20 = 400$

2. Find the square root of each number. $\sqrt{}$ → a # which when multiplied by itself, results in a given number

   a) $\sqrt{64} = \sqrt{8 \times 8} = \sqrt{8^2} = 8$

   b) $\sqrt{100} = \sqrt{10 \times 10} = \sqrt{10^2} = 10$

   c) $\sqrt{1} = \sqrt{1 \times 1} = \sqrt{1^2} = 1$

   ex: 5 is the square root of 25.

working backwards

3. Find the number whose square root is:

   a) $\sqrt{?} = 9$ → $9^2 = 81$ → do inverse operation (squaring)

   b) $5^2 = 25$

   c) $7^2 = 49$

H.W. (page: 15-16) #5-9, 11, 13-17, 19