



Solve Each of The Following In Your Notebooks

$$\begin{aligned} 1) \quad & 3 + 7(10-6) - 2 = \\ & = 3 + 7(4) - 2 \\ & = 3 + 28 - 2 \\ & = 31 - 2 \\ & = 29 \end{aligned}$$

$$\begin{aligned} 2) \quad & 10 \times 5 + 3(12-3) = \\ & = 10 \times 5 + 3(9) \\ & = 50 + 27 \\ & = 77 \end{aligned}$$

No talking try it on your own

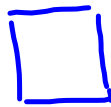


1.1 Square Roots of Perfect Squares



A new parking lot is a square with an area of 900 m^2 . What is the side length of the square?

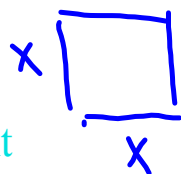
Think Area of a Square



Write the area as a **product** $(30)(30) = 900$

"Square" THEN...

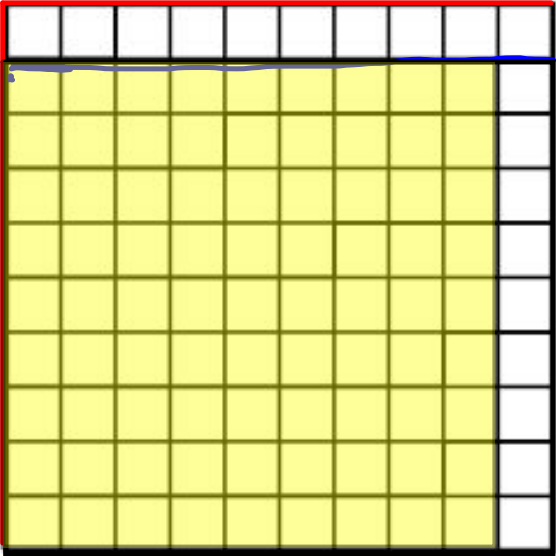
Base = Height



$$(x)(x) = \text{area}$$

$$x^2 = 900$$

Area = base x height



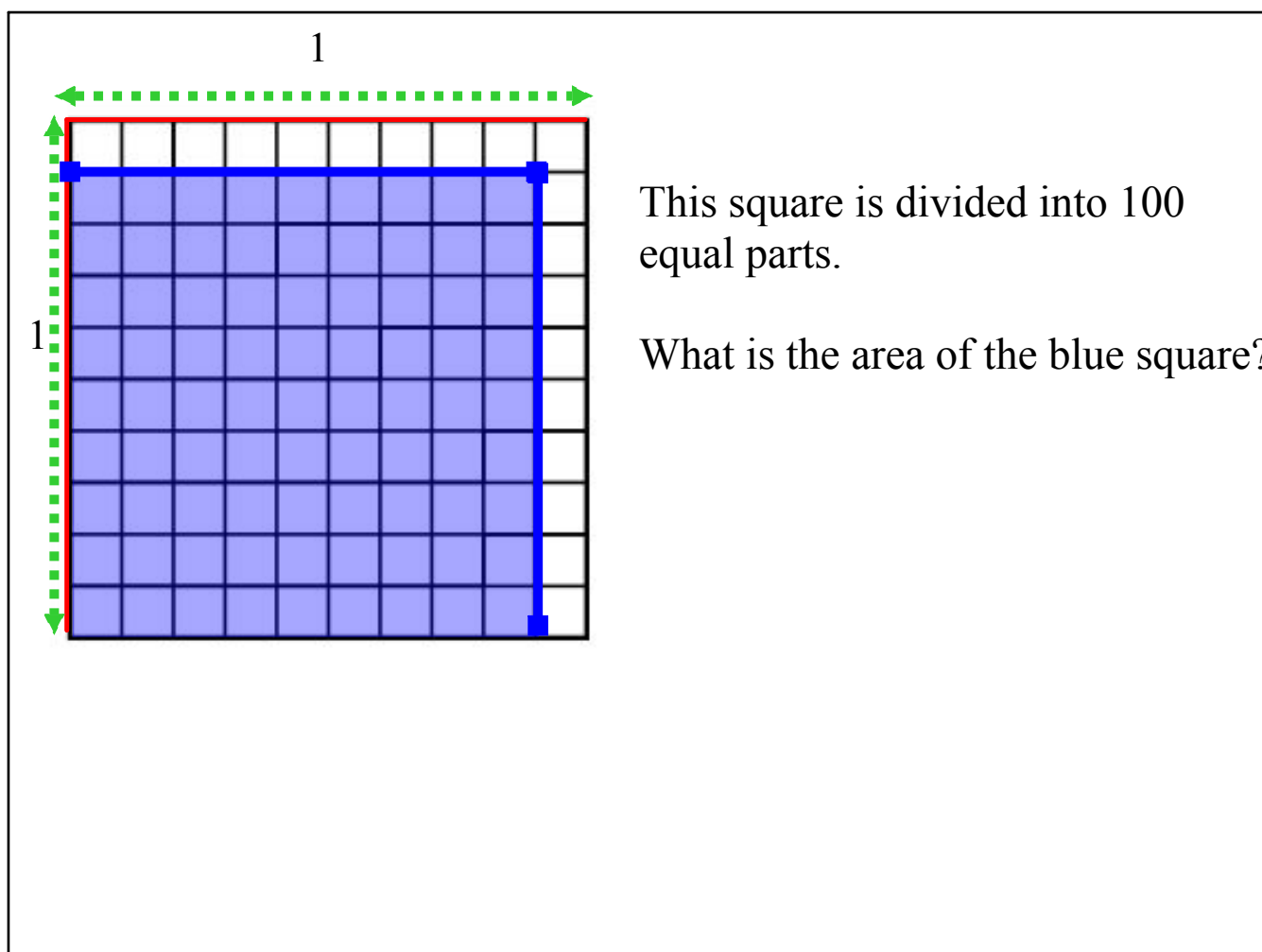
10

10

Area????

Now shade in another square 9 x 9 ... What is the area?

$$\left(\frac{9}{10}\right)\left(\frac{9}{10}\right) = \frac{81}{100}$$



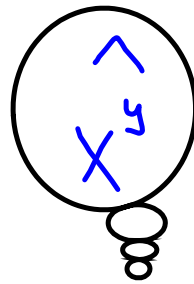
<u>Area of a Product</u>	<u>Side length as a Square Root</u>
9	<u>3</u>
16	<u>4</u>
81	<u>9</u>
49	<u>7</u>
169	<u>13</u>
<u>100</u>	10
<u>196</u>	<u>14</u>

To determine the side length of a square we,
calculate the "square root" of its area



← This is the symbol to represent
"Square Root"

Square Root is the opposite to Squaring a number



alternate calculator buttons

$$(4500) \boxed{Y^x} 0.5 = 67.08$$



is the same as using the
exponent 0.5

Example

$$\sqrt{625} = 25$$

$$(625)^{0.5} = 25$$

Area of a square is $\frac{196}{100}$

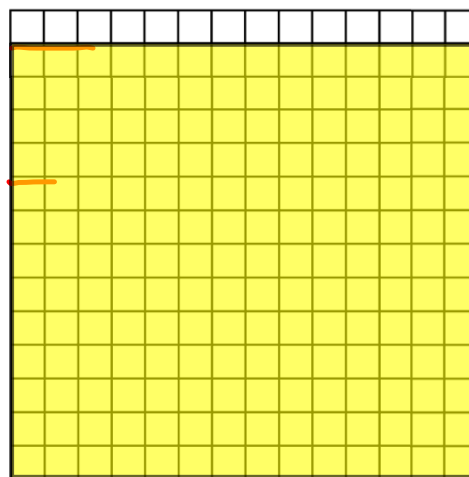
Then the length of a side is determined by taking the square root of the its area.

$$\text{Side Length} = \sqrt{\frac{196}{100}}$$

$$= \sqrt{\frac{14 \times 14}{10 \times 10}}$$

$$= \frac{14}{10}$$

The side length is $\frac{14}{10}$ units



Find the square root without using a calculator

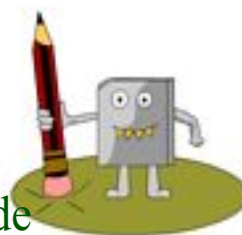
$$\begin{aligned}\sqrt{90\,000} &= \sqrt{9 \times 10\,000} \\ &= \sqrt{3 \times 3 \times 100 \times 100} \\ &= 3 \times 100 \\ &= 300\end{aligned}$$

$$\begin{aligned}\sqrt{676} &= \sqrt{2 \times 338} \\ &= \sqrt{2 \times 2 \times 169} \\ &= \sqrt{2 \times 2 \times 13 \times 13} \\ &= 2 \times 13 \\ &= 26\end{aligned}$$

Class/Homework

Page 11-12 3 - 12

You Try!!!!



For each area of a square find the length of its side

**Find the square root

1) $\frac{16}{100}$

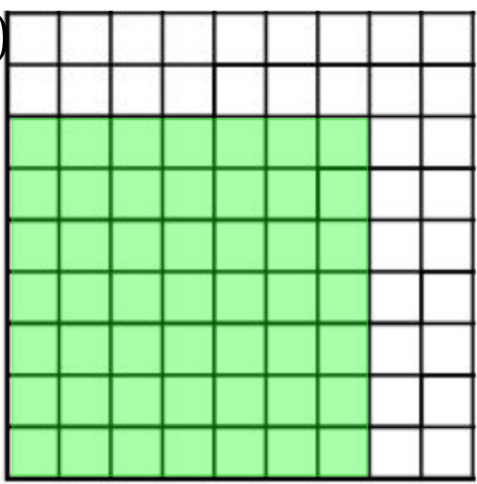
2) $\frac{9}{100}$

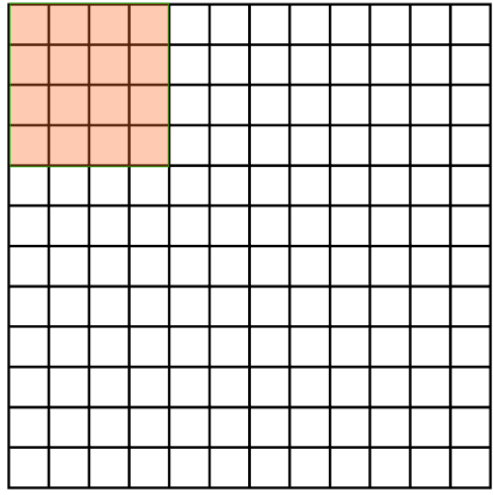
3) $\frac{400}{100}$

4) $\frac{256}{100}$

Sept 9, 2010
Introduction to High School Math
WARM UP

Determine the Area of the Shaded Squares

a) 

b) 

Find the square root of the following:

a) $\frac{1}{144}$ b) $\frac{121}{81}$ c) 36

Homework Solutions

Find the length of the side of a square whose areas are the following:

$$1) \frac{16}{100}$$

$$\sqrt{\frac{16}{100}}$$

$$\sqrt{\frac{4 \times 4}{10 \times 10}}$$

$$\frac{4}{10}$$

$$2) \frac{9}{100}$$

$$\sqrt{\frac{9}{100}}$$

$$\frac{3}{10}$$

$$3) \frac{400}{100}$$

$$\sqrt{\frac{400}{100}}$$

$$\frac{20}{10}$$

$$4) \frac{256}{100}$$

$$\sqrt{\frac{256}{100}}$$

$$\frac{16}{10}$$

Homework Solutions

$$3a) \frac{1}{2} \quad 3b) \frac{3}{4} \quad 3c) \frac{4}{5}$$

4)a) Perfect Square Numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100

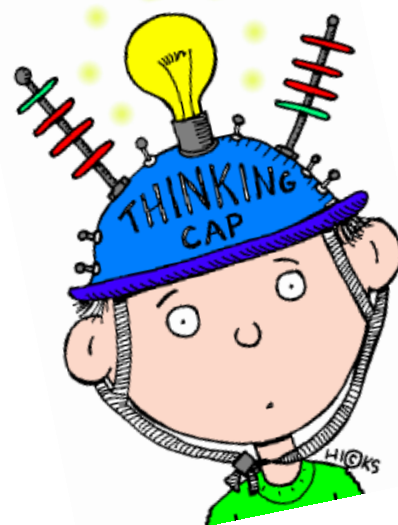
$$4)b) \sqrt{1} = 1, \sqrt{4} = 2, \sqrt{9} = 3, \sqrt{16} = 4, \sqrt{25} = 5, \sqrt{36} = 6, \sqrt{49} = 7, \\ \sqrt{64} = 8, \sqrt{81} = 9, \sqrt{100} = 10$$

6)a) Perfect Square Numbers: 121, 144, 169, 196, 225, 256, 289, 324, 361, 400

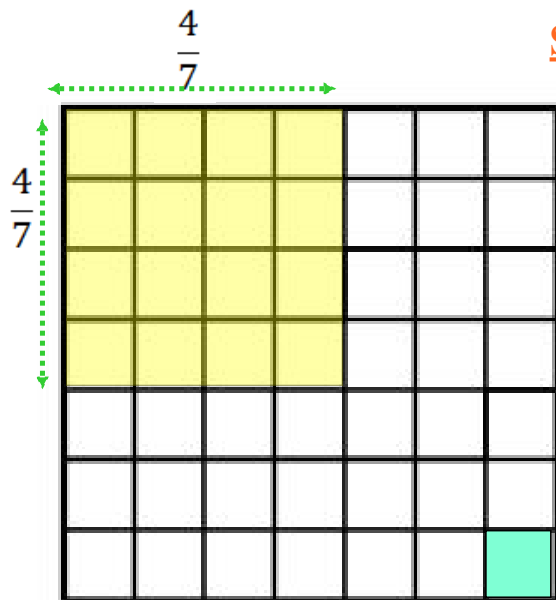
$$6)b) \sqrt{121} = 11, \sqrt{144} = 12, \sqrt{169} = 13, \sqrt{196} = 14, \sqrt{225} = 15, \\ \sqrt{256} = 16, \sqrt{289} = 17, \sqrt{324} = 18, \sqrt{361} = 19, \sqrt{400} = 20$$

Calculate the number whose square root is $\frac{4}{7}$

Basically what is the area????



Solutions



This square is $\frac{1}{49}$ square units

$$\left(\frac{4}{7}\right)^2 = \frac{4}{7} \times \frac{4}{7}$$
$$= \frac{16}{49}$$

So $\frac{4}{7}$ is the square root of $\frac{16}{49}$

You Try!!!



Calculate the number whose square root is .

1) $\frac{7}{11}$

2) $\frac{3}{5}$

3) 1.5

To Determine if a Fraction is a Perfect Square

BOTH Numerator and Denominator MUST be Perfect Square Numbers

***Simplify fractions first ***

$$\frac{27 \div 9}{45 \div 9} = \frac{3}{5}$$

Is each fraction a perfect square? Explain

a) $\frac{18}{32}$

b) $\frac{4}{3}$

c) $\frac{9}{25}$

Identifying Decimals that are Perfect Squares

1.44

Method 1

Write the decimal as a fraction

$$\frac{144}{100}$$

Simplify the fraction. Divide the numerator and denominator by 4.

$$1.44 = \frac{36}{25}$$

$$= \frac{6}{5} \times \frac{6}{5}$$

THUS 1.44 is a perfect square

Method 2

Use a Calculator.

Use the square root button $\sqrt{\quad}$

$$\sqrt{1.44} = 1.2$$

Since the square root is a terminating decimal then 1.44 is a perfect square.

Class/Homework

5 (a, c, e, g)

7 (a, c, e, g, i)

8 (a, c, d, f, g, i, , l)

9 (a, b, g, h)

10(a, b)

11 (a)

14

16

Page 11 & 12

Solutions

$$5a) \sqrt{0.36} = \sqrt{\frac{36}{100}} = \sqrt{\frac{6 \times 6}{10 \times 10}} = \frac{6}{10} = 0.6 \quad 5c) \sqrt{0.81} = \sqrt{\frac{81}{100}} = \sqrt{\frac{9 \times 9}{10 \times 10}} = \frac{9}{10} = 0.9$$

$$5e) \sqrt{\frac{1}{36}} = \sqrt{\frac{1 \times 1}{6 \times 6}} = \frac{1}{6} = 0.1\bar{6} \quad 5g) \sqrt{\frac{64}{100}} = \sqrt{\frac{8 \times 8}{10 \times 10}} = \frac{8}{10} = 0.8$$

$$7a) \sqrt{\frac{169}{16}} = \sqrt{\frac{13 \times 13}{4 \times 4}} = \frac{13}{4} = 3.25 \quad 7c) \sqrt{\frac{256}{361}} = \sqrt{\frac{16 \times 16}{19 \times 19}} = \frac{16}{19}$$

$$7e) \sqrt{144} = \sqrt{12 \times 12} = 12 \quad 7g) \sqrt{0.0121} = \sqrt{\frac{121}{10000}} = \sqrt{\frac{11 \times 11}{100 \times 100}} = \frac{11}{100} = 0.11$$

$$7i) \sqrt{0.0324} = \sqrt{\frac{324}{10000}} = \sqrt{\frac{18 \times 18}{100 \times 100}} = \frac{18}{100} = 0.18$$

8a) $0.12 \rightarrow \frac{12}{100} = \frac{3}{25}$ NO since numerator is not a perfect square OR
 “Decimal does not terminate when you take the square root”.

c) $0.25 \rightarrow \frac{25}{100} =$ YES

d) $1.69 \rightarrow \frac{169}{100} = \frac{13}{10} \times \frac{13}{10}$ YES

f) $\frac{36}{81} = \frac{6}{9} \times \frac{6}{9}$ YES

g) $\frac{81}{49} = \frac{9}{7} \times \frac{9}{7}$ YES

l) $\frac{8}{50} = \frac{4}{25} = \frac{2}{5} \times \frac{2}{5}$ YES

10) a) $\sqrt{12.25} = \sqrt{\frac{1225}{100}} = \sqrt{\frac{49}{4}} = \sqrt{\frac{7}{2} \times \frac{7}{2}} = \frac{7}{2} = 3.5$

b) $\sqrt{30.25} = \sqrt{\frac{3025}{100}} = \sqrt{\frac{121}{4}} = \sqrt{\frac{11}{2} \times \frac{11}{2}} = \frac{11}{2} = 5.5$

9) a) $0.3 \times 0.3 = 0.09$ c) $1.9 \times 1.9 = 0.0361$ e) $\frac{2}{3} \times \frac{2}{3} = \frac{4}{9}$

g) $\frac{1}{7} \times \frac{1}{7} = \frac{1}{49}$

$$11) \text{a) i) yes} \quad \text{ii) } \frac{36}{10} \text{ no bottom is not perfect} \quad \text{iii) } \frac{36}{100} = \frac{9}{25} = \frac{3}{5} \times \frac{3}{5}$$

$$\text{iv) } \frac{36}{1000} = \frac{9}{250} \text{ no bottom is not perfect} \quad \text{v) } \frac{36}{10000} = \frac{9}{2500} = \frac{3}{50} \times \frac{3}{50}$$

$$\text{vi) } \frac{36}{100000} = \frac{9}{25000} \text{ no bottom is not perfect}$$

*****NOTICE odd number of decimal places then not perfect*****

$$14) \text{ a) } \sqrt{5.76} = \sqrt{\frac{576}{100}} = \sqrt{\frac{144}{25}} = \sqrt{\frac{12}{5} \times \frac{12}{5}} = \frac{12}{5} = 2.4$$

Could have done this on the calculator

b) Perimeter = side + side + side + side

$$= 2.4\text{cm} + 2.4\text{cm} + 2.4\text{cm} + 2.4\text{cm}$$

$$= 9.6\text{ cm}$$

16) NO

$$\sqrt{0.04} = \sqrt{\frac{4}{100}} = \sqrt{\frac{1}{25}} = \sqrt{\frac{1}{5} \times \frac{1}{5}} = \frac{1}{5} = 0.2$$