

Name: _____

Date: _____

Math 8 Section 1.5a Perfect Squares and Cubes

1. Evaluate each of the following squares and cubes

a) $2^2 = 2 \times 2 = 4$	o) $2^3 = 2 \times 2 \times 2 = 8$
b) $3^2 = 3 \times 3 = 9$	p) $3^3 = 3 \times 3 \times 3 = 27$
c) $4^2 = 16$	q) $4^3 = 64$
d) $5^2 = 25$	r) $5^3 = 125$
e) $6^2 = 36$	s) $6^3 = 216$
f) $7^2 = 49$	t) $7^3 = 343$
g) $8^2 = 64$	u) $8^3 = 512$
h) $9^2 = 81$	v) $9^3 = 729$
i) $10^2 = 100$	w) $10^3 = 1000$
j) $11^2 = 121$	x) $11^3 = 1331$
k) $12^2 = 144$	y) $12^3 = 1728$
l) $13^2 = 169$	z) $13^3 = 2197$
m) $14^2 = 196$	aa) $14^3 = 2744$
n) $15^2 = 225$	ab) $15^3 = 3375$

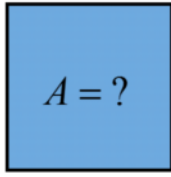
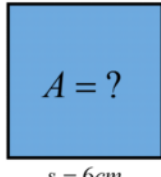
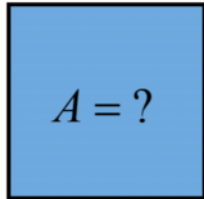
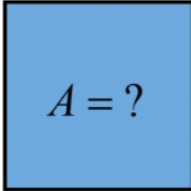
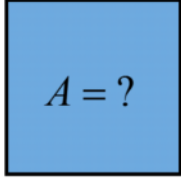
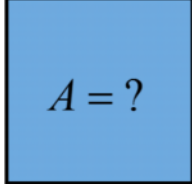
2. Given the following numbers, indicate which of the following are perfect squares:

a) 81 ✓ 9^2	b) 225 ✓ 15^2	c) 71 ✗	d) 169 ✓ 13^2
e) 144 ✓ 12^2	f) 289 ✓ 17^2	g) 1000 ✗	h) 0 ✓ 0^2
i) 25 ✓ 5^2	j) 125 ✗	k) 100 ✓ 10^2	l) 131 ✗
m) 121 ✓ 11^2	n) 10,000 ✓ 100^2	o) 49 ✓ 7^2	p) 256 ✓ 16^2
q) 400 ✓ 20^2	r) 441 ✓ 21^2	s) -25 ✗	t) 1.44 ✓ 1.2^2

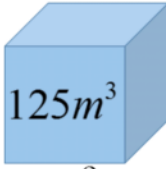
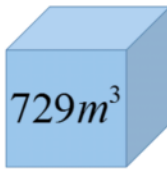
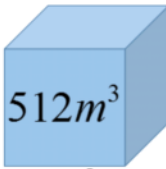
3. Given the following numbers, indicate which of the following are perfect cubes:

a) 8 $\checkmark 2^3$	b) 27 $\checkmark 3^3$	c) 256 \times	d) 100 \times
e) 144 \times	f) 64 $\checkmark 4^3$	g) 1000 $\checkmark 10^3$	h) 0 $\checkmark 0^3$
i) 25 \times	J) 125 $\checkmark 5^3$	K) 216 $\checkmark 6^3$	L) -8 $\checkmark (-2)^3$
m) 1 $\checkmark 1^3$	n) 10,000 \times	o) -343 $\checkmark (-7)^3$	p) 2^6 $\checkmark (2^2)^3$

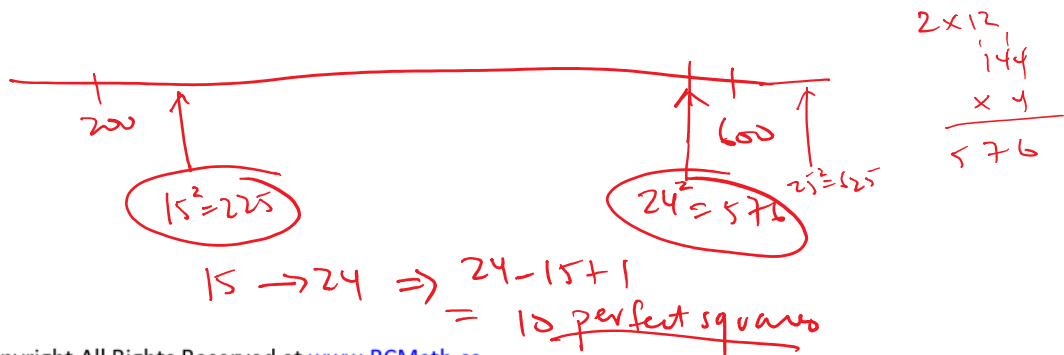
4. Find the area of each of the following squares:

a)  $s = 12\text{cm}$ $A = 144\text{cm}^2$	b)  $s = 6\text{cm}$ $A = 36\text{cm}^2$	c)  $s = 7\text{m}$ $A = 49\text{m}^2$
d)  $s = 20\text{cm}$ $A = 400\text{cm}^2$	e)  $s = 17\text{cm}$ $A = 289\text{cm}^2$	f)  $s = 25\text{m}$ $A = 625\text{m}^2$

5. Find the volume of each of the following cubes:

a)  125m^3 $s = ?$ $s = 5$	b)  729m^3 $s = ?$ $s = 9$	c)  512m^3 $s = ?$ $s = 8$
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6. How many perfect squares are there between 200 and 600?



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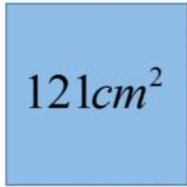

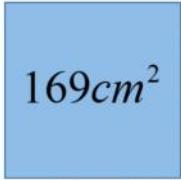
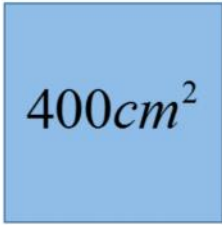
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Math 8 Section 1.5b Square Roots and Cube Roots

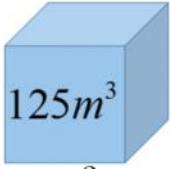
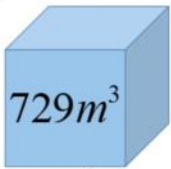
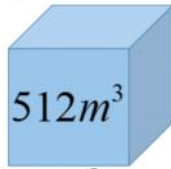
1. Evaluate each of the following squares and cubes

a) $\sqrt{4} = 2$	o) $\sqrt{36} = 6$
b) $\sqrt{25} = 5$	p) $\sqrt{49} = 7$
c) $\sqrt{100} = 10$	q) $\sqrt{64} = 8$
d) $\sqrt{121} = 11$	r) $\sqrt{400} = 20$
e) $\sqrt{441} = 21$	s) $\sqrt{289} = 17$
f) $\sqrt{81} = 9$	t) $\sqrt{55^2} = 55$
g) $\sqrt{1} = 1$	u) $\sqrt{169} = 13$
h) $\sqrt{9^2} = 9$	v) $\sqrt{0} = 0$
i) $\sqrt{-25} = \text{N/A}$	w) $\sqrt{8 \times 8} = 8$
j) $\sqrt{3 \times 3 \times 3 \times 3} = 3^2 = 9$	x) $\sqrt{5^4} = 5^2 = 25$
k) $\sqrt[3]{27} = 3$	y) $\sqrt[3]{8} = 2$
l) $\sqrt[3]{64} = 4$	z) $\sqrt[3]{1} = 1$
m) $\sqrt[3]{-8} = -2$	aa) $\sqrt[3]{125} = 5$
n) $\sqrt[3]{6 \times 6 \times 6} = 6$	ab) $\sqrt[3]{4^3} = 4$

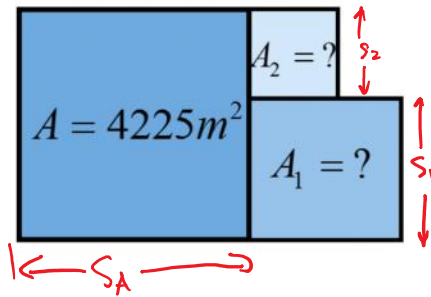
2. Given the area of each square, find the length of its side

<p>a)</p>  25cm^2 $s = \sqrt{25} = 5$	<p>b)</p>  100cm^2 $s = \sqrt{100} = 10$	<p>c)</p>  121cm^2 $s = \sqrt{121} = 11$
<p>d)</p>  289cm^2 $s = \sqrt{289} = 17$	<p>e)</p>  169cm^2 $s = \sqrt{169} = 13$	<p>f)</p>  400cm^2 $s = \sqrt{400} = 20$

3. Given the volume of each cube, find the side length

<p>a)</p>  125m^3 $s = \sqrt[3]{125} = 5$	<p>b)</p>  729m^3 $s = \sqrt[3]{729} = 9$	<p>c)</p>  512m^3 $s = \sqrt[3]{512} = 8$
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4. Two squares stacked on top of each other is placed next to a larger square. What are the possible areas of the two smaller squares?



① $s_A = \sqrt{4225} = 65$

② $s_1 + s_2 = 65$

Note: Assuming
 • s_1 is bigger than s_2
 • both s_1 & s_2 are integers

	s_1	s_2	A_1	A_2
③	1	64	1	
	2	63	4	
	3	62	9	
	4	61	16	361
	5	60	25	360
	6	59	36	
	7	58	49	
	8	57	64	329
	9	56	81	326
	10	55	100	325
	11	54	121	
	12	53	144	329
	13	52	169	324
	14	51	196	321
	15	50	225	320
	16	49	256	
	17	48	289	

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$$\begin{array}{r} 676 \\ 53 \overline{) 424} \\ \underline{9} \\ 529 \end{array}$$

$$\begin{array}{r} x^2 + 2x + 1 \\ (x+1)^2 = 51 \cdot \frac{676}{673} \end{array}$$