

MID-TERM EXAM PREPARATION

First half of CHAPTER 1

SQUARE ROOTS of PERFECT & NON-PERFECT SQUARES

1. Complete the two columns in the following table.

Square Root	Perfect Square	Square Root	Perfect Square
1	1	0.1	.01
2	4	0.2	.04
3	9	0.3	.09
4	16	0.4	.16
5	25	0.5	.25
6	36	0.6	.36
7	49	0.7	.49
8	64	0.8	.64
9	81	0.9	.81
10	100	1	1.00
11	121	1.1	1.21
12	144	1.2	1.44
13	169	1.3	1.69
14	196	1.4	1.96
15	225	1.5	2.25
16	256	1.6	2.56
17	289	1.7	2.89
18	324	1.8	3.24
19	361	1.9	3.61
20	400	2	4.00
21	441	2.1	4.41
22	484	2.2	4.84
23	529	2.3	5.29
24	576	2.4	5.76
25	625	2.5	6.25

2. a) How can you tell if a decimal is a perfect square?

- even # of decimal places
- # if decimals are removed is a perfect square.

b) How can you tell if a fraction is a perfect square?

- numerator - perfect square
- denominator - perfect square
- ★ Reduce fraction first if you can!

3. Determine whether the following numbers are perfect squares or not. Circle the perfect squares. For those that you've decided are NOT perfect squares, state why not!

a) 0.32 - No - 32 ≠ PS

b) 4.9 - no - odd # of decimals.

c)  $\frac{81}{144} = \frac{9}{12}$

d)  $\frac{9}{12}$  - No 12 ≠ P.S.

e) 0.0064 = 0.08

d)  $\frac{8}{50}$  - Yes, 8 ≠ PS, 50 ≠ PS.  
but! =  $\frac{4}{25} = \frac{2}{5}$

4. a) Use the fact that  $\sqrt{49} = 7$  to write the value of each square root.

i)  $\sqrt{4900}$  70

ii)  $\sqrt{490}$  not perfect  $\approx 22.1$

iii)  $\sqrt{.49}$  0.7

iv)  $\sqrt{.0049}$  0.07

b) Use the fact that  $\sqrt{121} = 11$  to write the value of each square root.

i)  $\sqrt{12100}$  110

ii)  $\sqrt{1210}$  not perfect  $\approx 34.8$

iii)  $\sqrt{1.21}$  1.1

iv)  $\sqrt{.121}$  not perfect  $\approx 0.35$

v)  $\sqrt{.0121}$  0.11

5. Calculate the number whose square root are the following. SHOW YOUR WORKS!

a) 0.03

= 0.0009

b) 2.11

= 4.4521

c)  $\frac{3}{7} = \frac{9}{49}$

6. Determine the square root.

a)  $\sqrt{\frac{225}{49}}$

$\frac{15}{7}$

b)  $\sqrt{\frac{9}{25}}$

$\frac{3}{5}$

c)  $\sqrt{0.0225}$

0.15

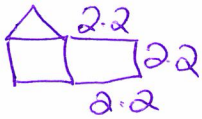
7. A square garden has area  $4.84 \text{ m}^2$ .

a) What is the side length of the garden?

$\sqrt{4.84} = 2.2 \text{ m}$

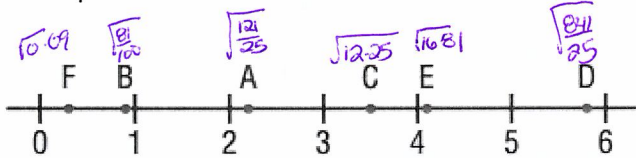
2.2 m

b) One side of the garden is against a house. How much fencing is needed to enclose the garden? Show.



6.6 m

8. Which letter on the number line below corresponds to each square root?



i)  $\sqrt{12.25} = 3.5$

C

iv)  $\sqrt{\frac{81}{100}} = \frac{9}{10} = 0.9$

B

ii)  $\sqrt{\frac{121}{25}} = \frac{11}{5} = 2.2$

A

v)  $\sqrt{0.09} = 0.3$

F

iii)  $\sqrt{16.81} = 4.1$

E

vi)  $\sqrt{\frac{841}{25}} = \frac{29}{5} = 5.8$

D

9. Use a calculator to determine the approximate square roots to the nearest tenth.

a)  $\sqrt{13.38}$

= 3.7

b)  $\sqrt{\frac{48}{55}}$

= 0.9

c)  $\sqrt{\frac{1}{11}}$

= 0.3

d)  $\sqrt{.8}$

= 0.9

10. Use benchmarks to determine an approximate value of each square root.

a)  $\sqrt{6.78}$

$\frac{12.79}{2} = 6.395$   
 $\frac{222}{3} = 74$   
 $\sqrt{6.78} \approx 2.6$

2.6

b)  $\sqrt{.92}$

$\frac{11}{9} = 1.222$   
 $\frac{8}{10} = 0.8$   
 $\frac{9.6}{10} = 0.96$   
 $\sqrt{.92} \approx 0.96$

0.96

c)  $\sqrt{\frac{131}{4}}$

$\frac{10}{11} = 0.909$   
 $\frac{12}{13} = 0.923$   
 $\frac{14}{14} = 1$   
 $\sqrt{131} \approx 11.4$   
 $\sqrt{4} = 2$   
 $\frac{11.4}{2} = 5.7$

5.7

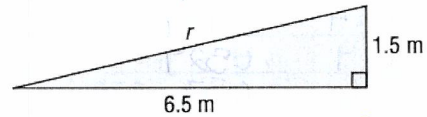
d)  $\sqrt{\frac{1}{2}}$

$\frac{1}{1} = 1$   
 $\frac{2}{3} = 0.666$   
 $\sqrt{1} = 1$   
 $\frac{1}{1.4} = 0.7$

0.7

11. In each triangle, determine the unknown length.

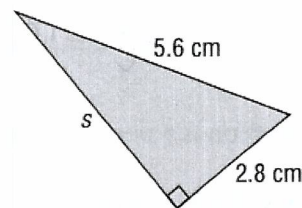
a)



6.7 m

$1.5^2 + 6.5^2 = r^2$   
 $2.25 + 42.25 = r^2$   
 $\sqrt{44.5} = r$   
 $r = 6.7 \text{ m}$

b)



4.8 cm

$s^2 + 2.8^2 = 5.6^2$   
 $s^2 = 5.6^2 - 2.8^2$   
 $s^2 = 31.36 - 7.84$   
 $\sqrt{23.52} = s$   
 $s = 4.8 \text{ cm}$