Name: _____ Date: _____

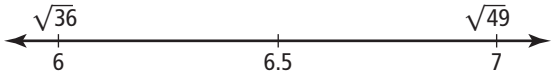
3.3 Estimating Square Roots

***MathLinks 8*, pages 95–100**

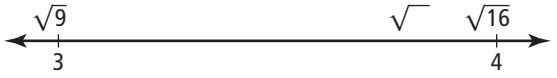
Key Ideas Review

Use your estimating skills to complete #1.

1. a) Estimate the square root of 40 using the number line below.



b) Estimate the whole number that has a square root two thirds of the way along the number line between 3 and 4.



2. Complete the following.

a) When I use a calculator to calculate the square root of a natural number that is a perfect square, I get a _____ number as my answer. This is a(n) _____ answer.

b) When I use a calculator to get the square root of a natural number that is *not* a perfect square, the answer the calculator gives me has a _____ in it. This is not an exact answer. It is a(n) _____.

Practise and Apply

3. List the perfect squares immediately before and after the whole number.

Perfect Square Before	Whole Number	Perfect Square After
a)	5	
b)	18	
c)	78	
d)	95	

4. Identify all of the whole numbers with a square root larger than 5 and smaller than 6.

5. Estimate the square root to one decimal place. Show your work. Check your answer with a calculator.

a) $\sqrt{17}$

b) $\sqrt{85}$

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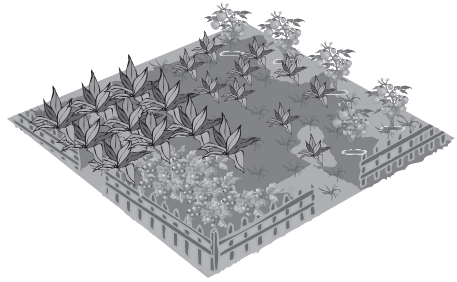
6. Write the perfect square immediately before and after the whole number, and then estimate the square root of the whole number to one decimal place. Check your estimates with a calculator.

Perfect Square Before	Whole Number	Perfect Square After	Approx-imate Square Root
a)	27		
b)	55		
c)	105		
d)	140		

7. Martina's painting is on a square canvas with an area of 45 cm^2. She needs to buy a frame for the painting. Estimate the square's side length to one decimal place. Show your work.

8. Braden's new game board has 225 small squares. All of the small squares form one large square. How many small squares are along one side? Show your work.

9. Chelsea's square garden has an area of 60 m^2.



a) Estimate to one decimal place the side length of the garden.

b) She has 32 m of fencing to go around the garden. Does she have enough fencing? Explain your thinking.

10. Aaron's parents want to buy an area rug for their 4 m $\times$ 4 m living room. They want space around the rug. The rug itself cannot take up more than 90% of the living room. What is the maximum size of rug they can buy? Show your work.