

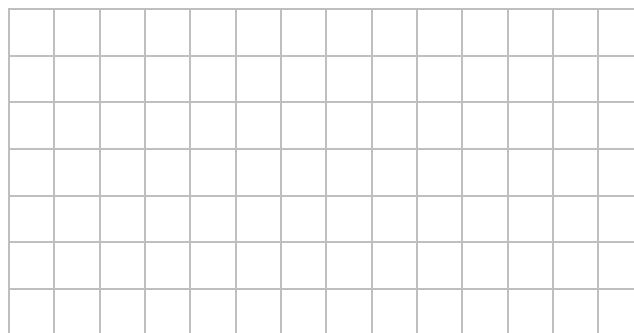
Unit 3: Number Sense

Quiz (Lessons 58–63) — ON & WNCP

Name: _____

Date: _____

1. Use the grid to show that the numbers 9 and 25 are perfect squares.



2. Explain why 20 is not a perfect square.

3. Calculate the perfect square.

a) 3^2

= _____

b) 7^2

= _____

c) 5^2

= _____

d) 4^2

= _____

e) 9^2

= _____

4. Make a factor rainbow for 18: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

5. Evaluate.

a) $\sqrt{25}$

b) $\sqrt{36}$

c) $\sqrt{64} + \sqrt{9}$

d) $\sqrt{25 + 144}$

6. a) Find the prime factorization of 144.

b) Explain using the prime factors how you can tell 144 is a perfect square.

Unit 3: Number Sense

continued

Quiz (Lessons 58–63) — ON & WNCP

7. a) Which two consecutive whole numbers is $\sqrt{43}$ between? _____ and _____

b) Estimate $\sqrt{43}$ to one decimal place by checking and revising.

BONUS: Evaluate.

a) $\sqrt{400}$

b) $\sqrt{160\,000}$

Unit 3: Number Sense

Answer Key

Quiz (Lessons 58–63) — ON & WNCP

1. Teacher to check for squares with sides 3 and 5.
2. You cannot draw a square with area 20 units² having whole numbers as lengths of sides.
3.
 - a) 9
 - b) 49
 - c) 25
 - d) 16
 - e) 81
4. Teacher to check rainbow.
1 & 18, 2 & 9, 3 & 6
5.
 - a) 5
 - b) 6
 - c) $8 + 3 = 11$
 - d) $\sqrt{169} = 13$
6.
 - a) $2 \times 2 \times 2 \times 2 \times 3 \times 3$
 - b) There are an even number of each prime in the factorization.
7.
 - a) 6 and 7
 - b) $6.5^2 = 42.25$
 $6.6^2 = 43.56$
 $\sqrt{43} \doteq 6.6$

BONUS

- a) 20
- b) 400

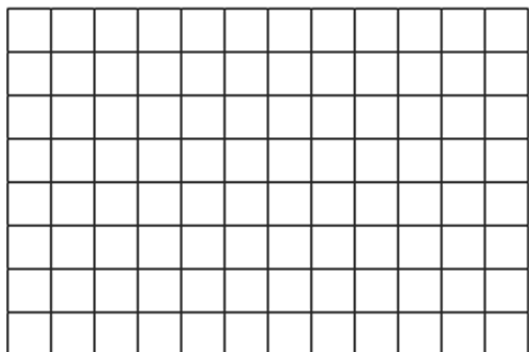
Unit 3: Number Sense

Test (Lessons 58–63) — ON

Name: _____

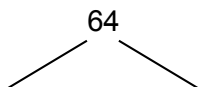
Date: _____

1. Draw all non-congruent rectangles with area 12. Explain why 12 is not a perfect square.



2. Draw the factor rainbow of 16. Which factor is the square root? How do you know?

3. a) Find the prime factorization of 64 by first finding the prime factorization of its square root.



- b) The prime number 2 occurs _____ times in the prime factorization of 64.

How many time will 2 occur in the prim factorization of 64^2 ? _____

4. Evaluate.

a) $\sqrt{25} - \sqrt{16}$

b) $\sqrt{64} \div \sqrt{16}$

c) $\sqrt{49} \times \sqrt{9}$

Unit 3: Number Sense

continued

Test (Lessons 58–63) — ON

5. Evaluate the two expressions. Then write = or \neq in the box.

a) $\sqrt{25} - \sqrt{9}$ $\sqrt{25 - 9}$

b) $\sqrt{9} \times \sqrt{4}$ $\sqrt{9 \times 4}$

6. a) Which two consecutive whole numbers is $\sqrt{55}$ in between? _____ and _____
How do you know?

b) Explain why a square with area 55 cm^2 does not have a whole number side length (in cm).

c) Estimate $\sqrt{55}$ to one decimal place by guessing, checking and revising. Show your work.

BONUS: $\left(\frac{3}{2}\right)^2 = \frac{3}{2} \times \frac{3}{2} = \frac{\boxed{}}{\boxed{}} = \underline{\hspace{1cm}} . \underline{\hspace{1cm}} \underline{\hspace{1cm}}$

$1.5^2 = 1.5 \times 1.5 = \underline{\hspace{1cm}} . \underline{\hspace{1cm}} \underline{\hspace{1cm}}$

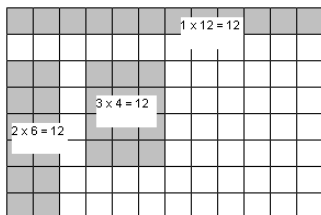
Compare your answers. Explain.

Unit 3: Number Sense

Answer Key

Test (Lessons 58–63) — ON

1.



There is no square, so 12 is not a perfect square.

2.



4 is the square root because it loops to itself.

3. a) $8 = 2 \times 2 \times 2$
 $64 = 8 \times 8$

$$= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \\ = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

b) 6 and 12

4. a) $5 - 4 = 1$

b) $8 \div 4 = 2$

c) $7 \times 3 = 21$

5. a) \neq

$$5 - 3 = 2, \sqrt{16} = 4$$

b) $=$

$$3 \times 2 = 6, \sqrt{36} = 6$$

6. a) $49 < 55 < 64$, which means that:

$$\sqrt{49} < \sqrt{55} < \sqrt{64}$$

$$\therefore 7 < \sqrt{55} < 8$$

b) A square with area 55 cm^2 will have sides of $\sqrt{55} \text{ cm}$, which is not a whole number (since there is no whole number between 7 and 8).

c) Try, for example, 7.3 and multiply:

$$7.3 \times 7.3 = 53.29$$

This is too low, so let's try:

$$7.4 \times 7.4 = 54.76$$

This is much closer.

Students can either stop here or try:

$$7.5 \times 7.5 = 56.25$$

This is further from 55 than 54.76 so, to one decimal place,

$$\sqrt{55} \approx 7.4.$$

BONUS

$$\left(\frac{3}{2}\right)^2 = \frac{3}{2} \times \frac{3}{2} = \frac{9}{4} \\ = 2.25$$

$$1.5^2 = 1.5 \times 1.5 = 2.25$$

These are the same;

because $\frac{3}{2} = 1.5$, squaring

them gives the same number.