

# SUPERSTARS III

*Uranus, XII*

Name: \_\_\_\_\_

(This shows my own thinking.)

- ★★1. Goldbach, a Russian mathematician, conjectured that every even counting number greater than 2 can be written as the sum of two different prime numbers. For example,  $10 = 3 + 7$ .

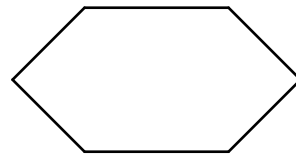
Write each of these as a sum of two different primes:

a)  $26 =$  \_\_\_\_\_

b)  $82 =$  \_\_\_\_\_

- ★2. How many diagonals does a hexagon have?

Answer: \_\_\_\_\_



- ★★3. Mrs. Searcy's class is entering a riddle writing contest sponsored by *MATH WIZZ* magazine. Leila wrote this riddle:

*Find 3 integers whose product is -36 and whose sum is 5.*

What is the answer to Leila's riddle?

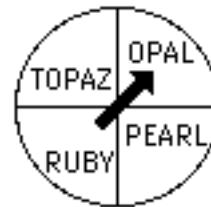
Answer: \_\_\_\_\_

- ★★4. Compute the following:  $24 + 33 + 40$

Answer: \_\_\_\_\_

- ★★★5. Mark had to hit the same area of the spinner twice in a row to win his girlfriend a bracelet at the fair. What are his chances of hitting the same area two times in only two spins?

Answer: \_\_\_\_\_



- ★6. Circle the greatest decimal number below.

2.05

2.5

2.005

★★7. Use the Egyptian Symbol Chart below to write the Egyptian numeral as a decimal numeral.

Egyptian Symbol		Decimal Numeral
	(stroke)	1
∩	(ox yoke)	10
9	(coil of rope)	100
⊕	(lotus plant)	1000
└	(bent finger)	10,000
🐸	(tadpole)	100,000
🧑	(astonished man)	1,000,000

└ ⊕ 9 9 9 = \_\_\_\_\_

★★★8. How can you make change for a dollar using exactly 50 coins and only the coins listed below?

\_\_\_\_\_ dimes    \_\_\_\_\_ nickels    \_\_\_\_\_ pennies

★★★★9. The picture shows a peek at a honeycomb. The queen's nest is shown in the center.

a. How many nests touch the queen's nest?

answer: \_\_\_\_\_

b. How many nests touch a nest that touches the queen's nest? \_\_\_\_\_

c. The two sets of nests above could be called neighborhoods 1 and 2. How many nests in neighborhood 3? \_\_\_\_\_

Neighborhood 4? \_\_\_\_\_

Neighborhood 5? \_\_\_\_\_

d. What is an expression for the number of nests in Neighborhood  $n$ ? \_\_\_\_\_

