Key

2.1 HW Pg. 77-78 #4, 8-10, 16-19,29-31, 34, 36-38, 42

Find the next item in the pattern.

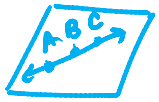
4. 

Show that each conjecture is false by finding a counterexample.

8. Kennedy is the youngest U.S. president to be inaugurated.
9. Three points on a plane always form a triangle.
10. For any real number x, if $x^2 \geq 1$, then $x \geq 1$.

President	Age at Inauguration
Washington	57
T. Roosevelt	42
Truman	60
Kennedy	43
Clinton	46

8) T Roosevelt was the youngest US President to be inaugurated.

9) 

10) $(-2)^2 \geq 1$, but $-2 \neq 1$

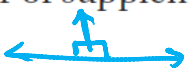
16. **Industrial Arts** About 5% of the students at Lincoln High School usually participate in the robotics competition. There are 526 students in the school this year. Make a conjecture about the number of students who will participate in the robotics competition this year.

.05(526)
26.3

About 26 students at LHS will participate in the robotics competition this year.

Show that each conjecture is false by finding a counterexample.

17. If $1 - y > 0$, then $0 < y < 1$. ex: $y = -2 \rightarrow 1+(+2) > 0$ ✓, but -2 is not between 0+1.
18. For any real number x, $x^3 \geq x^2$. ex: $x = -1 \rightarrow (-1)^3 \not\geq (-1)^2$ $-1 \not\geq 1$
19. Every pair of supplementary angles includes one obtuse angle.

 not if they are both 90° ☺

29. Write each fraction in the pattern $\frac{1}{11}, \frac{2}{11}, \frac{3}{11}, \ldots$ as a repeating decimal. Then write a description of the fraction pattern and the resulting decimal pattern.

.0909, .1818, .2727

30. **Math History** Remember that a prime number is a whole number greater than 1 that has exactly two factors, itself and 1. Goldbach's conjecture states that every even number greater than 2 can be written as the sum of two primes. For example, $4 = 2 + 2$. Write the next five even numbers as the sum of two primes.

$6 = 3+3$ $8 = 3+5$ $10 = 3+7$ $12 = 5+7$ $14 = 7+7$

31. The pattern 1, 1, 2, 3, 5, 8, 13, 21, … is known as the *Fibonacci sequence*. Find the next three terms in the sequence and write a conjecture for the pattern.

13+21 = 34
21+34 = 55
34+55 = 89

The sum of the 2 previous #'s is the next term in the pattern

34. Critical Thinking The turnaround date for migrating gray whales occurs when the number of northbound whales exceeds the number of southbound whales. Make a conjecture about the turnaround date, based on the table below. What factors might affect the validity of your conjecture in the future?

Migration Direction of Gray Whales							
	Feb. 16	Feb. 17	Feb. 18	Feb. 19	Feb. 20	Feb. 21	Feb. 22
Southbound	0	2	3	0	1	1	0
Northbound	0	0	2	5	3	2	1

The turnaround date will be on Feb. 19th.

MULTI-STEP TEST PREP

36. a. For how many hours did the Mock Turtle do lessons on the third day? 8 hrs

b. On what day did the Mock Turtle do 1 hour of lessons? on the 10th day.

"And how many hours a day did you do lessons?" said Alice, in a hurry to change the subject.

"Ten hours the first day," said the Mock Turtle: "nine the next, and so on."

days	hrs
1	10
2	9
3	8
4	7
5	6
6	5
7	4
8	3
9	2
10	1

37. Which of the following conjectures is false?

Ⓐ If x is odd, then $x + 1$ is even. 1+1=2✓ 3+1=4✓ 5+1=6✓

Ⓑ The sum of two odd numbers is even. 3+5=8✓ 1+9=10✓

Ⓒ The difference of two even numbers is positive. 8−6=2✓ but 6−8=−2✗

Ⓓ If x is positive, then $-x$ is negative. 8 → −8✓

38. A student conjectures that if x is a prime number, then $x + 1$ is not prime. Which of the following is a counterexample?

Ⓕ $x = 11$ 11+1=12 prime = 2, 3, 5, 7, 11, ...

Ⓖ $x = 6$ not a prime #

Ⓗ $x = 3$ 3+1=4

Ⓙ $x = 2$ 2+1=3

42. Physical Fitness Rob is training for the President's Challenge physical fitness program. During his first week of training, Rob does 15 sit-ups each day. He will add 20 sit-ups to his daily routine each week. His goal is to reach 150 sit-ups per day.

a. Make a table of the number of sit-ups Rob does each week from week 1 through week 10.

b. During which week will Rob reach his goal? week 8

c. Write a conjecture for the number of sit-ups Rob does during week n.

# of sit-ups = 20(week) − 5

W	Situps
1	15
2	35
3	55
4	75
5	95
6	115
7	135
8	155
9	175
10	195
n	