Math 7 Test   **Name:** _____
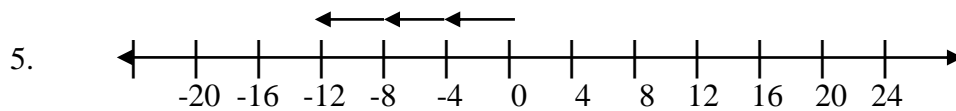**SOL 7.3—Integers**

1. Define integers. _____

_____

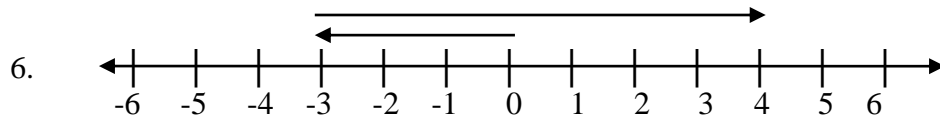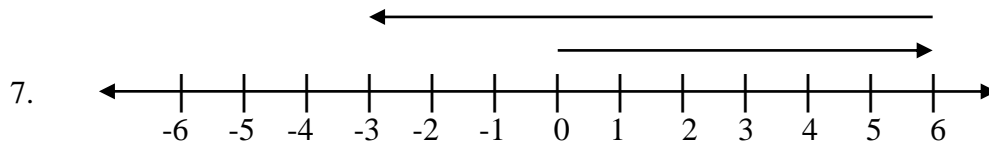**Draw a model to represent each numerical expression if** ⬤ **= 1 and** △ **= -1 and model the answer.**

2. $-5 + 6$

3. $6 \cdot (-3)$

4. $4 - 6$

For questions 5-7, write the numerical equation represented by each number line on the blanks.

5.

-20 -16 -12 -8   -4   0   4   8   12   16   20   24

_____

6.

-6   -5   -4   -3   -2   -1   0   1   2   3   4   5   6

_____

7.

-6   -5   -4   -3   -2   -1   0   1   2   3   4   5   6

_____

8. Write an integer to represent each situation.

    a) a gain of 5 yards   _____   b) a withdrawal of $23   _____

    c) 135 meters below sea level   _____   d) a temperature of 100° F   _____

9) Simplify each expression. Show all steps. Circle answers.

a) $\dfrac{-3 + 7 \cdot (-3^2)}{-5}$

b) $\dfrac{(9 - 15) \times 4^2 - 40}{3}$

c) $8 + 2 (8 - 3) \cdot (-4)$

d) $4 - [6 \div (12 \div 4)] \times 8$

Write a numerical equation to represent each situation below.

10. The highest temperature recorded in Death Valley is 121° F. The lowest temperature recorded on Mount Rainier is 25° F below zero. What is the difference in the two temperatures?

_____

11. Jake is playing a game in math class. He ends the first round with a loss of $300. He earns $800 in the second round. How much money does Jake have going into the third round?

_____

12. Tyler has a balance of $1,460 in his laundry account. He has $20 withdrawn each month to pay for his laundry service. Write a numerical equation to represent the total amount Tyler will pay for one year of laundry service. Also, write a numerical equation to represent the balance Tyler will have in his laundry account after one year.

_____   _____
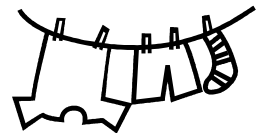
13. Mr. Simpson invested $7,000 in a new restaurant. The investment lost the same amount of money each month for 6 months. Only $2,200 remains of the original investment. Write a numerical equation to represent how much money Mr. Simpson lost each month?

_____

14.   The temperature was 48° F at 10 a.m. and 70° F at 3 p.m. The temperature decreased by about 4° F per hour after 3 p.m. How much warmer was the temperature at 5 p.m. than it was at 10 a.m.? Write a numerical equation.

_____

15. The following table gives enrollment figures for 7th graders at LFA. Complete the table below. How many seventh graders are enrolled at LFA at the end of December if there were 120 students at the beginning of September? Show all work below.
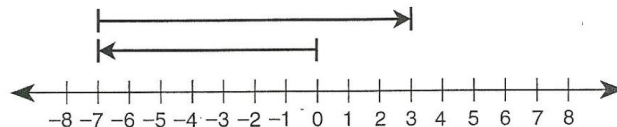
Month	Transfers In/Out	# Students
September	-3	
October	+7	
November	-10	
December	+2	

Number of students enrolled in 7th grade at LFA at the end of December _____

Choose the correct answer. Put letter choice in the blanks.

_____ 16. Which expression is represented by the model below?

-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

    A. -7 + 0   B. -7 + 3   C. -7 + 7   D. -7 + 10

_____ 17. Which number set is ordered from least to greatest?
    A. -13; +12; 8; -5; +4   B. +12; -13; +8; -5; +4
    C. +4; -5; +8; +12; -13   D. -13; -5; +4; +8; +12

_____ 18. One week, Jamal's Novelty Shop *sold* $2,550 worth of goods. His *expenses* for that week were $2,800. What was Jamal's profit (+) or loss (-) for that week?
    A. $250.00   B. -$250.00   C. -$5,350   D. $5,350

_____ 19. Ernie the elephant was put on a diet to lose weight. He lost 7 pounds per week for 14 weeks. Which describes his weight change?
    A. -147 lbs.   B. 98 lbs.
    C. -21 lbs.   D. -98 lbs.

_____ 20. In a series of three plays, the Panthers gained 8 yards, lost 3 yards, and gained 4 yards. Which integer describes the team's total gain or loss after these three plays?
    A. +1 yd.   B. -3 yds.   C. +9 yds.   D. + 15 yds.

_____ 21. Pure water boils at 212° F. If a certain chemical is added to the water, the boiling point changes by -28° F. At what temperature does the new liquid boil?
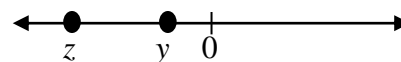   A. 240° F   B. 184° F   C. -184° F   D. -240° F

_____ 22. Use the number line to complete the sentence.
The value of $\frac{y}{z}$ will be—
    A. negative because y and z are negative   B. positive because y is closer to 0 than z
    C. positive because y and z are negative   D. negative because z is farther from 0 than y

Write an expression for each of the following pictures and evaluate. Key: ◯ = 1 and ● = (-1)

23. ◯ ◯ ◯ ◯ + ◯ ◯ _____

24. ◯ ◯ ◯ ◯ ◯ ◯
    +
    ● ● ● ● _____

25. ◯ ◯ ◯ [◯ ◯] ↗ _____

26. ◯ ◯ ◯ ↑
    [◯ ●]
    [◯ ●] _____

27. (● ●)(● ●)(● ●) _____

28. ◯ | ◯ | ◯ | ◯
    ◯ | ◯ | ◯ | ◯ _____

29. ● ● ●
    [◯ ●] ↑ _____

30. ● ● ● ● ↗
    [● ● ● ●] _____

Math SOL 7.3—Integers
Answer Key

1. The set of whole numbers and their opposites
2. Check model. 1
3. Check model. (-18)
4. Check model. (-2)
5. $3 \times (-4) = (-12)$
6. $(-3) + 7 = 4$
7. $6 - 9 = (-3)$
8. a) 5   b) -23   c) -135   d) 100
9. a) -12   b) -72   c) -32   d) -12
10. $121 - (-25) = 146$
11. $(-300) + 800 = 500$
12. $(-20) \times 12 = -240; [1,460 + (-20 \times 12)] = 1,220$
13. $(7,000 - 2,200) \div 6 = 800$
14. $[(70 + (-4 \times 2)] - 48 = 14$
15. 117. 124. 114. 116 ; 116
16. D
17. D
18. B
19. D
20. C
21. B
22. C
23. $4 + 2 = 6$
24. $7 + (-4) = 3$
25. $5 - 2 = 3$
26. $3 - (-2) = 5$
27. $3 \times (-2) = (-6)$
28. $8 \div 4 = 2$
29. $-3 - 1 = (-4)$
30. $-8 - (-4) = (-4)$