

Handout 1

Presentation Outline
Math Games & Centers in Afterschool
WisLine Professional Development Event
February 15, 2007
10:00 a.m. – 11:30 a.m. CT

1. Introduction
2. Poll: Familiarity with NPQAL Afterschool Toolkit
3. Outcomes
4. Overview of presentation
5. Time on the Website: <http://www.sedl.org/afterschool/toolkits>
6. Q & A
7. Rationale for math games and math centers
8. Poll: Use of math games in afterschool
9. Quick review of integers
10. Play the math game 24®
11. Play the math game Number Wizards
12. Discuss planning and assessment of math games & centers
13. Reflection, Q&A, next steps

Handout 2

Reflective Questions for the Video, Math Game 24®

As you view this video think about these questions:

1. Are the students challenged? What are they doing?
2. What is the instructor doing?
3. What evidence do you see of planning?
4. What Wisconsin mathematics standards are addressed?
5. What is the setting (room arrangement, student arrangement)?
6. What learning goals do you see?

Reflective Questions for the Video, Bacon and Eggs

As you view this video, think about these questions:

1. What mathematics skills (standards) are being addressed?
2. Are the students engaged? Explain.
3. What age groups can play this game?
4. What pre-planning is needed for the game to be successful?
5. In what ways does this game differ from 24®?

Handout 3

Negative and Positive Integers

Integers

Integers are whole numbers. Positive integers are numbers greater than zero: 1, 2, 3, 4, 5, 6, 7, ... , and have a “positive sign.” If an integer has no sign, it is positive. Negative integers are numbers less than zero: -1, -2, -3, ... and have a “negative sign.” Zero is neither positive nor negative. For every positive integer there is an opposite negative integer (for example, 3 and -3; 6 and -6, -45 and 45), and these integers are called opposites.

Absolute Value

The absolute value of a number is positive. In math, n is frequently used to represent a number. The way to write absolute value is to put two vertical bars on either side of the number. $|n|$ is read as “the absolute value of n .” The absolute value of -3 is written $|-3|$ and the absolute value of negative 3 is positive 3 or $|-3| = 3$.

Adding Integers

If integers have the same sign, add their absolute values and give the results the same sign.

Adding All Positive integers

$$12 + 2 = 14$$

$$2 + 4 = 6$$

$$100 + 12 = 112$$

Adding All Negative Integers

$$(-14) + (-12) = -(14 + 12) = -26$$

$$-2 + -4 = -(2 + 4) = -6$$

Adding Positive and Negative Integers

If integers have opposite signs, take the absolute values of the numbers, subtract the smaller one from the larger one, and give the resultant the sign of the larger absolute value.

$-3 + 1 = |3| - |1| = -2$ since 3 has the larger absolute value and its sign is negative, the answer is negative

$11 + (-2) = |11| - |2| = 9$ since 11 has the larger absolute value and its sign is positive, the answer is positive

Subtracting Integers

Subtracting integers is the same as adding its opposite..

$$18 - 9 = 18 + (-9) = 9$$

$$-30 - (39) = -30 + (-39) = -69$$

$$18 - (-9) = 18 + (9) = 27$$

$$-30 - (-39) = -30 + (39) = 9$$

Handout 3 p. 2

Multiplying and Dividing Integers

If two numbers have the same sign, the answer is positive

$$3 * 2 = (|3| * |2|) = 6$$

$$-6 / -2 = |-6| / |-2| = 3$$

$$-3 * -2 = 6$$

$$6 / 2 = 3$$

Similarly, if both numbers have different signs, the answer is negative.

$$-3 * 2 = -6$$

$$-6 / 2 = -3$$

Integer Coordinates

A point on a graph or grid has a pair of integer coordinates, called an ordered pair or simply coordinates. The point of origin has a special pair or integer coordinates, (0, 0), and it is called the starting point. Above and to the right of the origin is positive, and below and to the left of the origin is negative. On an x, y grid, the horizontal axis is known as the x axis and the vertical axis is the y axis. In an ordered pair, x is given first and y second. Thus (2, 5) is a point located at the intersection of a line 2 units to the right of the origin on the x axis and a line 5 units above the origin on the y axis; (-2,-5) is a point found at the intersection of a line 2 units to the left of the origin and a line 5 units below the origin.

A coordinate grid in a PDF format that can be printed from these Websites,

www.sedl.org/afterschool/toolkits/math/pdf/ex_hide_seek.pdf

and

<http://score.kings.k12.ca.us/lessons/graphing/coordinate.pdf>

A lesson on making line graphs can be found at

http://www.sedl.org/afterschool/toolkits/science/ex_line_graphs.html

Comparing Integers (Greater Than > and Less Than <)

To compare two numbers look at their relative positions on a number line.

Integers on the right are greater than integers on the left.

-3 is greater than -9 or $-3 > -9$.

54 is less than 56 or $54 < 56$

-25 is less than 0 or $-25 < 0$

Handout 4

Number Wizards

Each player writes the number (0 to 9) that comes up in a 10-sided die roll, on a card draw (Joker = 0, Ace=1, 2 ...9) or in a spin in one space on his or her game board. Once the digit is written, it cannot be moved. When all ten spaces are filled, the game is over. The participants call out their number (i.e. one billion, two hundred thirty-nine million, four hundred sixty-nine thousand, seven hundred fifty-two). The winner creates the greatest number or the least number as pre-instructed.

Game 1

_____, _____, _____, _____

Game 2

_____, _____, _____, _____

Game 3

_____, _____, _____, _____

Game 4

_____, _____, _____, _____

Game 5

_____, _____, _____, _____

Game 6

_____, _____, _____, _____

Game 7

_____, _____, _____, _____

Game 8

_____, _____, _____, _____

Game 9

_____, _____, _____, _____

Game 10

_____, _____, _____, _____