**Learning Works Charter School**

## *Integrated Math 2A*
## Module 5

Student Name: _____ Teacher Name: _____

As you work through the chapters in your Integrated Math 2 course, you will be encouraged to think and to make conjectures while you persevere through challenging problems and exercises. You will make errors – and that's okay! Learning and understanding occur when you make errors and push through mental roadblocks to comprehend and solve new and challenging problems.

**Text:** *Integrated Math 2,* Big Ideas, 2016

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**To ensure you are learning, you must show your work for all exercises.**
**YOU WILL <u>NOT EARN CREDIT</u> FOR ANSWERS <u>WITHOUT WORK</u>.**

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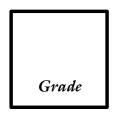**Chapter 5: Probability (5.1-5.6)**

_____ Maintaining Mathematical Proficiency (page 277): Complete exercises #1-4 **all**

_____ 5.1 Sample Spaces and Probability: Read the lesson and complete exercises
#1, 3, 4, 5, 9, 13, 15, 16, 20, 21, 33-38 **all**

_____ 5.2 Independent and Dependent Events: Read the lesson and complete exercises
#1, 3, 4, 6, 7, 11, 13, 31, 32

_____ 5.3 Two-Way Tables and Probability: Read the lesson and complete exercises
#3, 4, 6, 7, 8, 13, 27, 28, 29

_____ 5.4 Probability of Disjoint and Overlapping Events: Read the lesson and complete exercises
#3, 4, 5, 7, 9, 11-15 **all**, 24, 25, 26

_____ 5.5 Permutations and Combinations: Read the lesson and complete exercises
#1, 4, 7, 9, 10, 13, 15, 17, 18, 21, 25, 26, 27, 29, 31, 33

*Students must complete the Chapter Review and Project with a teacher or tutor at school.*

_____ Chapter Review (pages 326-328): Complete exercises #1-16 **all**

_____ Complete the attached Project **(No project = No credit)**

**A teacher or tutor reviewed the Chapter Review and Project with the student.**

Date: _____ Signature: _____

*Grade*

**A New Dart Board**



Study the dartboard pictured above. To keep score, you get the numbered score of the section you land on.  Using what you know about probability, describe how the scores for this dartboard are determined.   In other words, why is each section worth that amount of points?

_____
_____
_____

_____

Now, you will have a chance to design your own dartboard!

You are a graphic artist working for a company on a new design for the board in the game of darts. You are eager to begin the project, but the team cannot decide on the terms of the game. Everyone agrees that the board should have four colors. But some want the probabilities of hitting each color to be equal, while others want them to be different. You offer to design two boards, one for each group. How do you get started? How creative can you be with your designs?  Answer the questions below.

1.

    a) What 4 colors will you use for your board?

    b) Will it have a theme or a specific name?

**2.** How will you make sure that all four colors on one board have the same theoretical probability of being hit and that the colors on the other board do not have the same probability of being hit?

**3.**

    a) How will you choose the shape of your boards?

    b) What is important about the shape?

    c) Does the board with equal color probabilities have to be symmetrical?

    d) Does the board with unequal color probabilities have to be non-symmetrical? Explain.

**4.**

    a) How many sections will you have on each board?

    b) What is the minimum number of sections?

     c)  How will you shape the sections of your boards?

     d)  Do the sections on the board with equal probability need to be the same shape? Why or why not?

**5.**

     a)  How will players score points using your board?

     b)  Will each section be worth the same amount of points?

**6.**  Calculate the probabilities of hitting each color on your board. Use mathematics to show that each color on one board has an equal probability of being hit and that colors on the other board do not have an equal probability of being hit.