LESSON MAKER PRO

Inside the Circles

Find probabilities from overlapping events.

HIGH SCHOOL · A1.D.2.2

A1.D.2.2 "Given a Venn diagram, determine the probability of the union of events, the intersection of events, and the complement of an event. Understand the relationships between these concepts and the words "AND," "OR," and "NOT.""

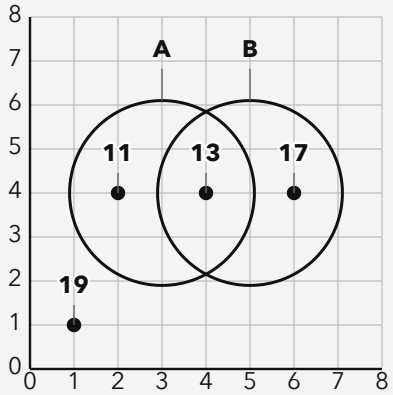
NAME _____ DATE _____

COUNT THE RIGHT REGIONS

A AND B means the overlap. A OR B means either circle, with the overlap counted once. NOT A means everything outside A. Divide the count you need by the total count.

WORKED EXAMPLE

Each number shows how many students are in that region. Find P(A OR B).



1. Total: 11 + 13 + 17 + 19 = 60
2. In A OR B: 11 + 13 + 17 = 41
3. Probability: 41/60

Answer: 41/60

PRACTICE 4 problems

1 Use these counts for Practice 1 to 4: A only 4, both 8, B only 12, neither 16. Find P(A AND B).

ANSWER _____

2 Find P(A OR B).

ANSWER _____

3 Find P(NOT A).

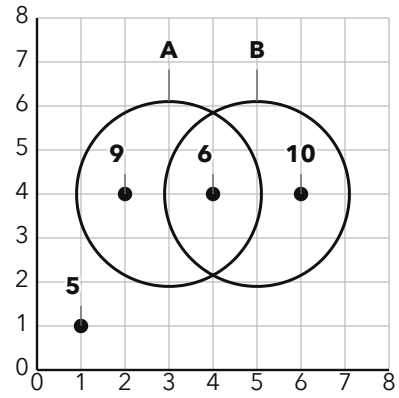
ANSWER _____

4 Find P(NOT (A OR B)).

ANSWER _____

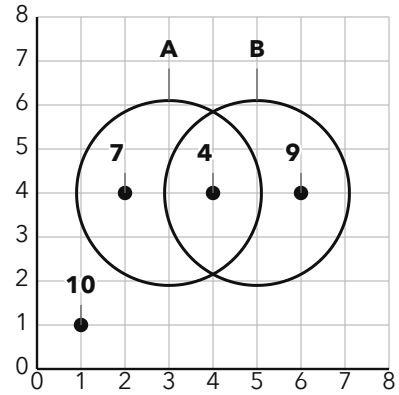
APPLY IT Show your work

1 A school surveyed students about events they attended. A = open mic; B = game night. Find P(A OR B).



ANSWER _____

2 Students reported how they got to school last week. A = rode a bike; B = rode a bus. Find P(NOT A).



ANSWER _____

CHALLENGE One step up

Use the counts from Practice 1. Among students NOT in A, what fraction are in B? Explain which counts you used.

WORK SPACE AND ANSWER

ANSWER KEY

Inside the Circles

HIGH SCHOOL · A1.D.2.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use these counts for Practice 1 to 4: A only 4, both 8, B only 12, neither 16. Find P(A AND B).	**1/5**
2	Find P(A OR B).	**3/5**
3	Find P(NOT A).	**7/10**
4	Find P(NOT (A OR B)).	**2/5**

PART 2 · APPLY IT

1. **5/6** There are 30 students total. The 9, 6, and 10 in either circle give 25/30 = 5/6.
2. **19/30** There are 30 students total. The 9 and 10 outside A give 19/30.

CHALLENGE

3/7. Of the 12 + 16 = 28 students outside A, 12 are in B, so the fraction is 12/28 = 3/7.

Accept equivalent fractions. In the challenge, students must use only the students outside A as the denominator.