

# VENN DIAGRAMS - HELP PAGE

# ANSWERS - PAGE 1

HEY MAX, TODAY MY TEACHER PUT A QUESTION ON THE BOARD. IT LOOKED SOMETHING LIKE THIS.

IN A GROUP OF 20 PEOPLE, 14 HAD THE COLOR BLUE ON THEIR SHIRT WHILE 15 OF THEM HAD THE COLOR RED. IF 12 OF THEM HAD BOTH COLORS, HOW MANY DID NOT HAVE BLUE OR RED ON THEIR SHIRT?

I CAN PICTURE THE 20 PEOPLE, BUT THE QUESTION IS VERY CONFUSING. I THINK THE BEST WAY TO SOLVE THIS IS TO USE A **VENN DIAGRAM**.

A VENN DIAGRAM? WHAT'S THAT?

A VENN DIAGRAM HELPS US SEE HOW DIFFERENT SETS ARE RELATED. WE USE CIRCLES TO REPRESENT EACH GROUP.

I SEE, SO WE HAVE ONE CIRCLE FOR THE SHIRTS WITH BLUE AND ANOTHER CIRCLE FOR THE SHIRTS WITH RED.

BLUE SHIRTS: 14  
RED SHIRTS: 15

VERY GOOD, POE, BUT WE ALSO KNOW THAT 12 PEOPLE ARE WEARING SHIRTS WITH BLUE AND RED, SO WE NEED TO CONNECT THE CIRCLES TOGETHER TO SHOW THAT SOME PEOPLE HAVE BOTH COLORS.

BLUE AND RED SHIRTS

BLUE: 14  
RED: 15  
BOTH: 12

BUT WE STILL KNOW THAT 14 PEOPLE HAVE BLUE ON THEIR SHIRTS AND 15 HAVE RED ON THEIR SHIRTS. SO...

12 + 2 = 14 BLUE ON SHIRT AND  
12 + 3 = 15 RED ON SHIRT.

BLUE: 2  
RED: 3  
BOTH: 12

2 + 12 + 3 = 17, SO 20 - 17 = 3.

PERFECT, WHICH TELLS US THAT OUT OF THE 20 PEOPLE, 3 DID NOT HAVE EITHER BLUE OR RED ON THEIR SHIRT.

# VENN DIAGRAMS - PRACTICE

# ANSWERS - PAGE 2

HELPFUL EXAMPLE

I ASKED 25 OF MY CLASSMATES WHICH SPORT DID THEY LIKE, SKATEBOARDING OR SNOWBOARDING.

13 SAID SKATEBOARDING.  
16 LIKED SNOWBOARDING.  
AND 10 SAID THEY LIKED BOTH SPORTS.

HOW MANY OF MY CLASSMATES DO NOT LIKE EITHER SPORT?

SKATE: 13  
SNOW: 16  
BOTH: 10

3 + 10 = 13  
6 + 10 = 16

ANSWER: 6 CLASSMATES LIKE NEITHER SPORT.

SINCE 10 LIKE BOTH SPORTS WE ONLY COUNT THEM ONCE. THE VENN DIAGRAM TELLS US THAT 3 ONLY LIKE SKATEBOARDING, 6 LIKE ONLY SNOWBOARDING, AND 10 LIKE BOTH. 3 + 6 + 10 = 19, WHICH LEAVES 6 CLASSMATES WHO DO NOT LIKE EITHER SPORT (25 - 19 = 6).

## NOW YOUR TURN. USE A VENN DIAGRAM TO SOLVE THE PROBLEMS BELOW.

- A class was asked what was their favorite subject. Twenty students liked mathematics, seventeen liked language, and nine students liked both subjects. How many students are in the class?

IT HELPS TO START WHERE THE CIRCLES INTERSECT (JOIN TOGETHER).

MATH: 20  
LANGUAGE: 17  
BOTH: 9

ONLY MATH: 11  
ONLY LANGUAGE: 8  
BOTH: 9  
TOTAL: 28 STUDENTS
- Steve's mom order pizza for his birthday party. 38 people showed up to his party. 23 of the guest wanted pepperoni, 28 of them wanted sausage, and 15 wanted both pepperoni and sausage. How many guest did not like either topping?

PEPPERONI: 23  
SAUSAGE: 28  
BOTH: 15

ONLY PEPPERONI: 8  
ONLY SAUSAGE: 13  
BOTH: 15  
NEITHER TOPPINGS: 2
- In John's neighborhood 25 families only have dogs, 42 of them have cats, and 18 families have both dogs and cats. If there are 64 families in the neighborhood, how many do not have cats or dogs?

DOGS: 25  
CATS: 42  
BOTH: 18

ONLY DOGS: 7  
ONLY CATS: 24  
BOTH: 18  
NEITHER: 15
- You have two sets of numbers. Set A includes all counting numbers from 15 to 26 and Set B includes all even numbers between 21 and 31. If you draw a Venn Diagram what numbers will be in the intersection (what they have in common)?

SET A: 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26  
SET B: 22, 24, 26, 28, 30  
INTERSECTION: 22, 24, 26