Set Theory/Venn Diagrams

Definitions

$\cup$: union (everything in the sets)

$\cap$: intersection (what they have in common)

$\sim$: Complement (what is not in the set)

Set Theory #1 Worksheet

2 Given: Set $U = \{S, O, P, H, I, A\}$

Set $B = \{A, I, O\}$

If set B is a subset of set U, what is the complement of set B?

1) $\{O, P, S\}$
2) $\{I, P, S\}$
3) $\{A, H, P\}$
4) $\{H, P, S\}$

not in B

$\sim B$

6 Given:

$A = \{\text{perfect square integers from 4-100, inclusive}\}$

$B = \{16, 36, 49, 64\}$

The complement of set B in the universal set A is

1) $\{9, 25, 81\}$

2) $\{4, 9, 25, 81, 100\}$

3) $\{1, 4, 9, 25, 81, 100\}$

4) $\{4, 16, 36, 49, 64, 100\}$

$\sim B$

Set Theory #2 Worksheet

1 Given: $M = \{\text{green, red, yellow, black}\}$

$N = \{\text{blue, green, yellow}\}$

Which set represents $M \cup N$?

1) {yellow}
2) {green, yellow}
3) {blue, red, black}
4) {green, red, yellow, blue, black}

5 Given: $R = \{1, 2, 3, 4\}$

$A = \{0, 2, 4, 6\}$

$P = \{1, 3, 5, 7\}$

What is $R \cap P$?

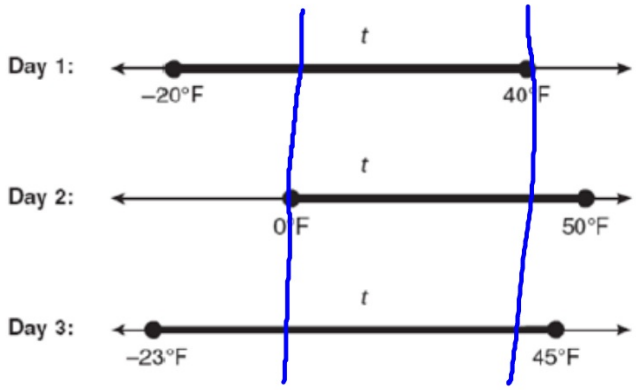
1) $\{0, 1, 2, 3, 4, 5, 6, 7\}$

2) $\{1, 2, 3, 4, 5, 7\}$

3) $\{1, 3\}$

4) $\{2, 4\}$

12 Maureen tracks the range of outdoor temperatures over three days. She records the following information.



Express the intersection of the three sets as an inequality in terms of temperature, t.

Day 1 ∩ Day 2 ∩ Day 3

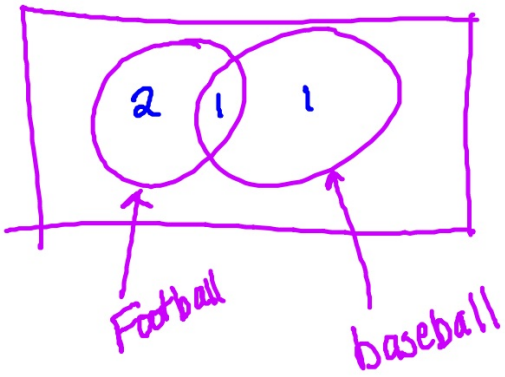
$0° \leq t \leq 40°$

Venn Diagram Worksheet

1 Monique has three sons who play football, two sons who play baseball, and one son who plays both sports. If all of her sons play baseball or football, how many sons does she have?

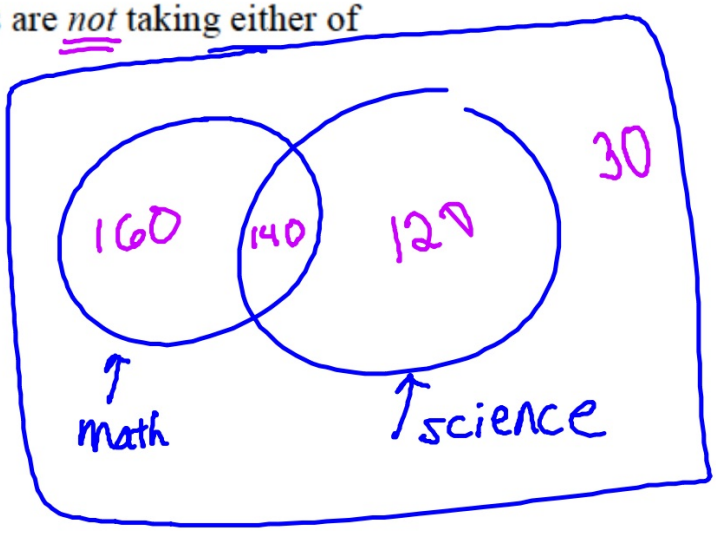
1) 5
2) 6
3) 3
4) 4

Football
Baseball



4 In a class of 450 students, 300 are taking a mathematics course and 260 are taking a science course. If 140 of these students are taking both courses, how many students are *not* taking either of these courses?

1) 30
2) 40
3) 110
4) 140



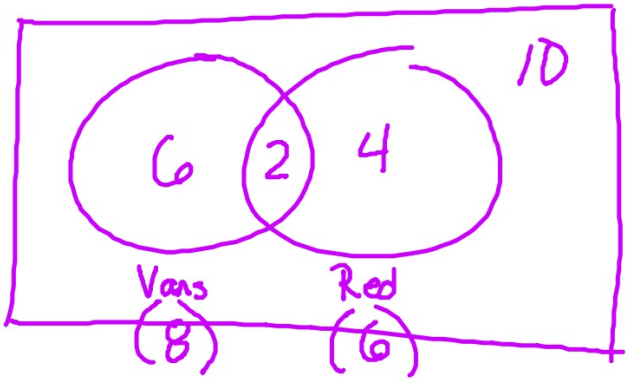
How many students are taking math or science?

420

math, science, or both

12 A car dealer has 22 vehicles on his lot. If 8 of the vehicles are vans and 6 of the vehicles are red, and 10 vehicles are neither vans nor red, how many red vans does he have on his lot? 2

22

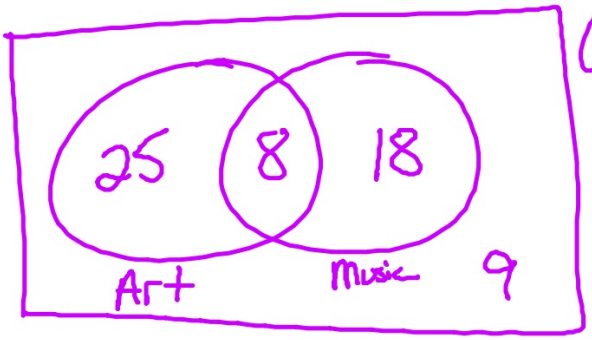


22
- 18 vans and not vans
4 not red

6+2+4+10=22

8+6+10=24
-22
2

16 In Clark Middle School, there are 60 students in seventh grade. If 25 of these students take art only, 18 take music only, and 9 do not take either art or music, how many take both art and music? 8 students



25
18
+ 9
52

60 − 52
8