

Welcome MYP 9 Mathematics!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 5-21 Topic: 3E.1 & 3E.2 Venn Diagrams	0 1 2	
Tuesday Date: 5-22 Topic: Venn Diagrams Day 2	0 1 2	
Wednesday Date: 5-23 Topic: Venn Diagrams Day 3	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Class Plan

1) Warm-up - Homework Questions?

2) Partner practice: Examine Rubric,
Real-life Venn Diagrams

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PROBABILITIES FROM VENN DIAGRAM

In **Chapter 3** we studied **Venn diagrams**. We saw that they consist of a rectangle which represents the universal set, and circles within it which represent subsets. In probability questions, the circles in a Venn diagram are used to represent particular events.

3) Practice

Rubric: Criterion D, Real-life application

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The student is able to:

- i. **identify** the relevant elements of the authentic real-life situation
- ii. **select** appropriate mathematical strategies to model the authentic real-life situation
- iii. **apply** the selected mathematical strategies to reach a correct solution to the authentic real-life situation
- iv. **Verify** the degree of accuracy of the solution
- v. **justify** whether the solution makes sense in the context of the authentic real-life situation

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Students do **without** error:

- Create a correct Venn diagram
- Verify sample space
- Shade correct region
- Write correct set notation
- Interpret set notation
- Calculate probabilities
- Justify response with evidence from diagram and probabilities
- Justify realism of scenario

Criterion D: Real Life Application

Do: 2014 Olympics with your partner.



Consider strengths: Partner assessment will be similar to unit 7 - all members will need to contribute to the documents/ assessment.

Done?: Check solutions on weebly.

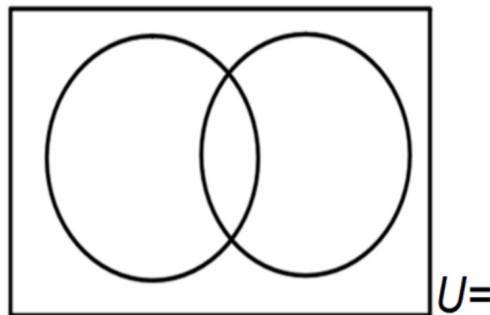
Do: Social Media Practice



Criterion D: Real Life Application

88 countries competed in the 2014 Winter games. Of these countries, 21 won gold medals, 22 won silver medals, but 63 countries did not win a gold or silver medal.

1. Complete a Venn diagram using the information above.



2. Verify sample space (check if the values in the Venn diagram add up to the U value).

Criterion D: Real Life Application

3. Shade the Venn diagram.

i) Shade the region showing countries that did not win a gold medal.

ii) Write this information in set notation. _____

4. State value and interpret the following notation:

i) $G \cap S =$ _____

ii) $(G \cup S)' =$ _____

iii) $G' \cap S =$ _____

iv) $G =$ _____

Criterion D: Real Life Application

5. Find the probabilities of the countries who:

i) Did not win a silver medal.

What is this notation? _____

ii) Did not win any of the medals.

What is this notation? _____

iii) Won a gold medal, but not a silver medal.

What is this notation? _____

iv) Won a gold medal or a silver medal.

What is this notation? _____

Criterion D: Real Life Application

6. Suppose 300 countries participated in the 2014 Winter Olympics. How many of the 300 countries would you expect to win a gold or a silver medal? Show work.

7. Examine your answer to #6. Defend whether this number of countries winning medals is realistic or not.

Criterion D: Real Life Application

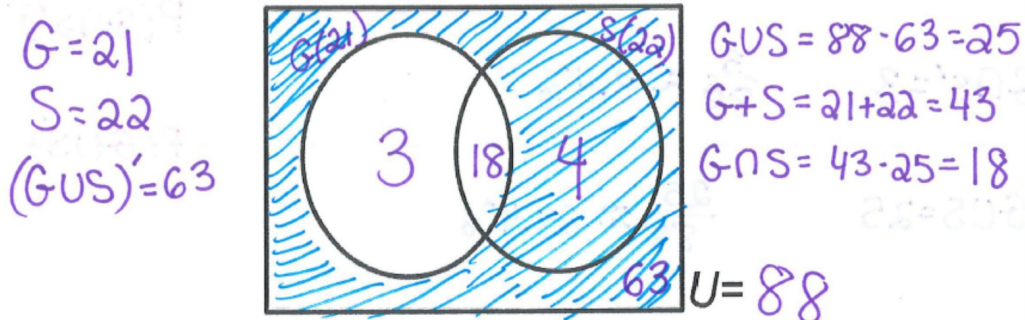
8. What conclusion(s) could be made about the 88 countries of the 2014 Winter Olympics?

2014 Winter Games Application Solutions

Scenario: 2014 Winter Games

88 countries competed in the 2014 Winter games. Of these countries, 21 won gold medals, 22 won silver medals, but 63 countries did not win a gold or silver medal.

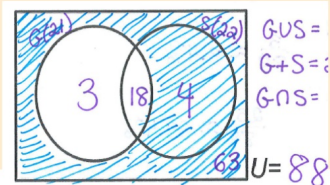
1. Complete a Venn diagram using the information above.



2. Verify sample space (check if the values in the Venn diagram add up to the U value).

$$3 + 18 + 4 + 63 = 25 + 63 = 88 \checkmark$$

2014 Winter Games Application Solutions



3. Shade the Venn diagram.

i) Shade the region showing countries that did not win a gold medal ✓

ii) Write this information in set notation. G'

4. State value and interpret the following notation:

i) $G \cap S = 18$ Countries that won both Gold and Silver medals.

ii) $(G \cup S)' = 63$ Countries that did not win a Gold or Silver medal.

iii) $G' \cap S = 4$ Countries that won silver and (but) not gold.

iv) $G = 21$ Countries that won gold medal(s).

2014 Winter Games Application Solutions

5. Find the probabilities of the countries who:

i) Did not win a silver medal. $\frac{66}{88} = \frac{33}{44} = 75\%$ What is this notation? $P(S')$
 $S' = 66$

ii) Did not win any of the medals. What is this notation? $P(G \cup S)'$
 $(G \cup S)' = 63$ $\frac{63}{88} \approx 71.6\%$

iii) Won a gold medal, but not a silver medal. What is this notation? $P(G \cap S')$
 $G \cap S' = 3$ $\frac{3}{88} \approx 3.4\%$

iv) Won a gold medal or a silver medal. What is this notation? $P(G \cup S)$
 $G \cup S = 25$ $\frac{25}{88} \approx 28.4\%$

2014 Winter Games Application Solutions

6. Suppose 300 countries participated in the 2014 Winter Olympics. How many of the 300 countries would you expect to win a gold or a silver medal? Show work.

$$P(GUS) = \frac{25}{88}$$
$$\frac{25}{88} = \frac{x}{300}$$
$$88x = 7500$$
$$x \approx 85 \text{ countries.}$$

7. Examine your answer to #6. Defend whether this number of countries winning medals is realistic or not.

Nearly 30% of the 88 participating countries won a silver or a gold medal. It seems mathematically possible for 85 out of 300 countries to win one or both of the medals, except there are less than 200 countries on Earth. 85 countries winning one or both medals does not seem realistic.

2014 Winter Games Application Solutions

8. What conclusion(s) could be made about the 88 countries of the 2014 Winter Olympics?

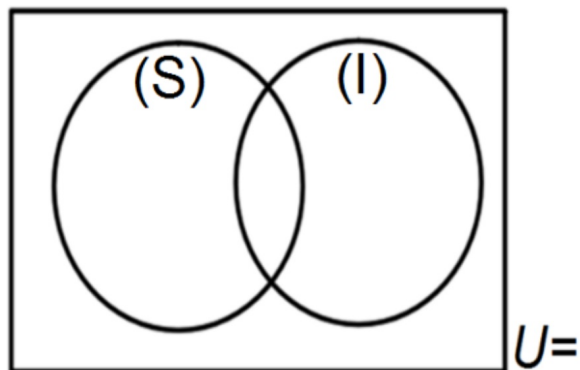
Most of the countries, 70%, did not win a medal in 2014. The fact that 18/88 over 20% won both a silver and gold imply that these countries dominated the Olympics. Smaller countries may be limited in their participants and training options.

Social Media Practice

Scenario: Students who use Instagram (I) and Snapchat (S) social media applications.

100 students were surveyed on their social media use. There were 86 students who used Snapchat. 54 students used both Snapchat and Instagram. 88 students used either Snapchat or Instagram.

1. Complete a Venn diagram using the information above.



2. Verify sample space (check if the values in the Venn diagram add up to the U value).

Social Media Practice

3. Shade the Venn diagram.

i) Shade the region showing students who use Snapchat but not Instagram.

ii) Write this information in set notation. _____

4. State value and interpret the following notation:

i) $S \cap I =$ _____

ii) $(S \cup I)' =$ _____

iii) $S' \cap I =$ _____

iv) $S =$ _____

Social Media Practice

A student is selected at random from those who took the survey.

5. Find the probabilities, but first write in set notation.

i) Does not use Snapchat

ii) Snapchat or Instagram

iii) Does not use both Snapchat and Instagram

iv) Exactly one social media application

Social Media Practice

6. Suppose 430 people were surveyed. Predict how many of the 430 would use Snapchat. Show detailed work, and justify the accuracy of your answer.

7. Defend whether the solution is, or is not, realistic.

Social Media Practice

8. Look back at the information in your Venn diagram.

i) Based on your knowledge of high school students, is this representation realistic?

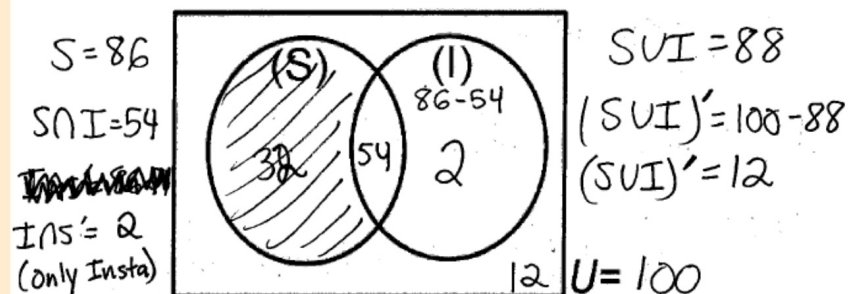
ii) Support your conclusion in i) using evidence from this assessment.

Social Media Practice Solutions

Scenario: Students who use Instagram (I) and Snapchat (S) social media applications.

100 students were surveyed on their social media use. There were 86 students who used Snapchat. 54 students used both Snapchat and Instagram. 88 students used either Snapchat or Instagram.

1. Complete a Venn diagram using the information above.



2. Verify sample space (check if the values in the Venn diagram add up to the U value).

$$32 + 54 + 2 + 12 = 100$$

3. Shade the Venn diagram.

i) Shade the region showing students who use Snapchat but not Instagram.

ii) Write this information in set notation. $S \cap I'$

Social Media Practice Solutions

4. State value and interpret the following notation:

i) $S \cap I =$ Both (54) "Snap AND Insta"

ii) $(S \cup I)' =$ Neither (12) "Not Snap nor Insta"

iii) $S' \cap I =$ Insta only (2) "Not snap ^(and) but Insta"

iv) $S =$ Snap (86)

Social Media Practice Solutions

A student is selected at random from those who took the survey.

5. Find the probabilities, but first write in set notation.

i) Does not use Snapchat

$$P(S') = \frac{14}{100} = \frac{7}{50}$$

ii) Snapchat or Instagram

$$P(S \cup I) = \frac{88}{100} = \frac{22}{25}$$

iii) Does not use both Snapchat and Instagram

$$P((S \cap I)') = \frac{46}{100} = \frac{23}{50}$$

iv) Exactly one social media application

$$P[(S \cap I)' \cup (S' \cap I)] = \frac{34}{100} = \frac{17}{50}$$

Social Media Practice Solutions

6. Suppose 430 people were surveyed. Predict how many of the 430 would use Snapchat. Show detailed work, and justify the accuracy of your answer.

$$\left(\frac{80}{100} \times \frac{x}{430} \right) \quad x = 369.8 \quad \text{About 370 people use Snapchat}$$

7. Defend whether the solution is, or is not, realistic.

Yes because almost everyone I know has Snapchat. About 19/20 people so if that was 400 it would be 380 people which is close to 370.

$$\left(\frac{19}{20} \times \frac{x}{400} \right) \quad x = 380$$

Social Media Practice Solutions

8. Look back at the information in your Venn diagram.

i) Based on your knowledge of high school students, is this representation realistic?

No because I think that less than 12 people would have neither, other than that I think more people would have both but its kind of realistic.

ii) Support your conclusion in i) using evidence from this assessment.

The probability of snapchat or instagram is 88%, I think it would more like 95% because I can't think of a person that uses neither. Its 46% that a person doesn't use both, which I don't think is realistic because ~~most~~ most of the people that use snapchat use instagram and other way around.