

Theofania the Dragonslayer

Geometry



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The Chasing of Biatudu





TDS X



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Theofania the Dragonslayer

Instructional Design Mind Map



Performance Task

Theofania the Dragonslayer

Embedded Skills

Calculate the area of an irregular figure

Calculate the area and circumference of a circle

Calculate the volume of prisms with fractional side lengths

Calculate the surface area of rectangular prisms

Calculate the perimeter of an irregular figure

Plot ordered pairs on a coordinate plane

Construct geometric figures on a coordinate plane

Construct flat patterns (nets) from volume and surface areas

Learning Targets

1

I can calculate the area and perimeter of irregular figures.

3

I can calculate the volume of rectangular prisms with fractional side lengths.



4

I can make flat patterns (nets) of rectangular prisms and calculate the surface area.

5

I can predict geometric shapes on a coordinate plane by simply looking at the coordinates.

2

I can plot ordered pairs and draw geometric figures on a coordinate plane

Big Ideas & Understandings

Geometry and spatial sense offer ways to envision, to interpret and to reflect on the world around us.

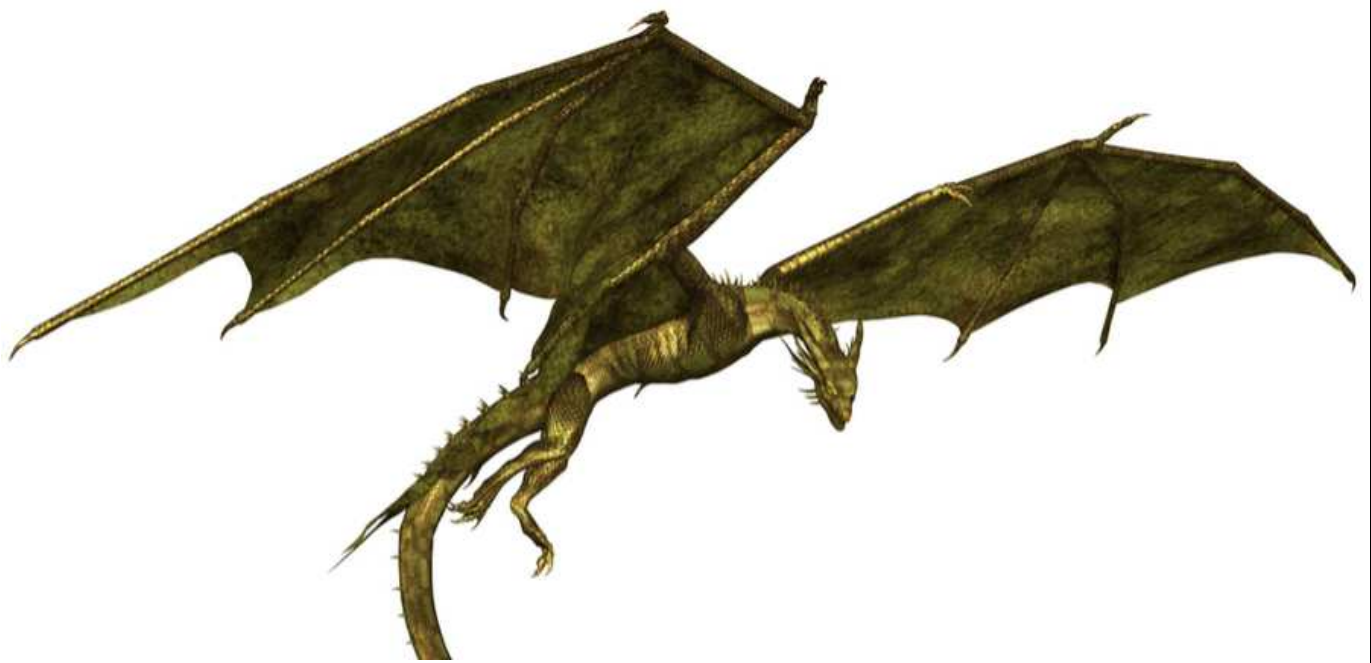
Properties of 2-dimensional shapes are used in solving problems involving 3-dimensional shapes.

The Goal

Area, volume and surface area are measurements that relate to each other and apply to objects and events in our real life experiences.

Students will be able to independently use their learning to problem solve and think critically to recognize and solve problems involving 2-D and 3-D shapes.

Dragons and Falconworth





Theofania the Dragonslayer

Dragons and Falconworth

1. In Europe during Medieval Times, tales of terrifying, fire-breathing dragons grew far and wide. These dragons stirred awe and terror in the myths and legends of cultures ever since. Medieval dragons are portrayed as terrible, evil, and dangerously fierce carnivorous reptiles with wings and a tail for added balance. These colossal magical beasts has the ability to fly and simultaneously breathe fire to wreak havoc on villages during the Middle Ages.



2. Medieval dragons have a longstanding association with magic, and they are left with the job of guarding and watching over hidden treasures and fortunes. Medieval dragons would also take women, especially young women of the childbearing age and royal bloodlines. Medieval knights were eager to prove their faith and would battle dragons to the death. Occasionally, dragon monsters would wander into villages, and leave great destruction and death in their wake. This led many a brave knight to attempt to hunt down and slay the dragons. Even with a slim chance of winning a battle with a fierce fire-breathing dragon, knights soon discovered that dragon-hunting and dragon-defending were very profitable and would bring them plenty of fame and fortune.





Theofania the Dragonslayer

Dragons and Falconworth

3. During the Middle Ages, there is a legend that has been told about the slaying of one of the most fierce dragons named Biatudu, the Protector of all Creatures. The legend has sparked controversy over whether the slaying actually happened. The controversy was not so much over the slaying, but who was responsible for the slaying. The Middle Ages were known for many of its gallant male knights. Many of the knights with their famous coat of arms were notorious warriors and tempestuous.

4. Biatudu wreaked havoc on many of the villages during the time Biatudu's behemothic stature instilled fear throughout the land as villages dissipated one by one. Valiant knights made numerous attempts to stop Biatudu with no avail. As Biatudu made his way through the villages, his next stop was the Village of Falconworth.



5. The Village of Falconworth was mainly comprised of peasants, serfs, freeman and villiens. The most important buildings of Falconworth were the parish church, parsonage, the mill, and blacksmith's shop. The Village of Falconworth inhabited roughly one-hundred people. Most of the dwellings were small thatched-roofed, one room, and grouped in "The Green." The great people of Falconworth were very self-sufficient. They produced everything they required at home, mainly to avoid the expense of trade. The community of hard workers led a comfortable existence except when crops failed. Falconworth's people enjoyed their work in the fields and playing sports on the Village Green.



After reading paragraphs 1-5,
answer the questions for
TDS: SC 1 in your student
companion.



TDS: SC 1

Dragons and Falconworth



Theofania the Dragonslayer

Dragons and Falconworth



TDS : SC 1

Dragons and Falconworth

1. In paragraph 1, why did the narrator most likely portray dragons during Medieval times as “terrible, evil, and dangerously fierce carnivorous reptiles”?

- a. To let the reader know that dragons are colossal magical beasts that have the ability to fly.
- b. To let the reader know that dragons were a major problem that needed to be solved to save villages and their people during the Middle Ages.
- c. To let the reader know that dragons were terrifying because they have the ability to fly and simultaneously breathe fire.
- d. To let the reader know that during Medieval Times, dragons were dangerous creatures and could only be eliminated through magical powers.

2. In paragraph 2, the narrator states that even with a “slim chance of winning” a fight against a dragon, knights still hunted down dragons. Using evidence from the text, why did this most likely occur?

- a. Knights wanted to protect their villages.
- b. Knights found that dragon-hunting could make them rich and famous.
- c. Knights were fearless and fascinated with dragons longstanding association with magic.
- d. Knights although brave and gallant warriors lacked common sense.



3. In paragraph 4, the narrator stated “Biatudu’s behemothic stature instilled fear throughout the land.” What is the definition of the base word in behemothic?

- a. gigantic
- b. diminutive
- c. dwarf
- d. subnormal

4. Which of the following terms best describes the great people of Falconworth?

- a. incompetent
- b. needy
- c. efficient
- d. dependent

5. In paragraph 5, the narrator states “The Village of Falconworth was mainly comprised of peasants, serfs, freemen, and villiens”. Using context clues, the people of Falconworth would likely be considered a part of which of the following social classes of Medieval Times?

- a. Royalty
- b. Hereditary Nobility
- c. Non-Hereditary Nobility



A Plan of Defense





Theofania the Dragonslayer

A Plan of Defense

1. With consternation growing within the Village of Falconworth, a plan of defense needed to be developed. The people of Falconworth needed something or someone to help with the cessation of Biatudu's dominance. Falconworth did not know that one of the greatest warriors of the Middle Ages was among its people. This is where the legend of Theofania begins. Theofania the Dragonslayer, as (she became known), would be the heroine for the Village of Falconworth. Theofania was the daughter of Owen the Invincible. Owen was a legendary warrior of the Wars of Slifyhr. During the wars, Owen secretly sent Theofania to the Village of Falconworth for her protection. Unfortunately, Owen the Invincible was not so invincible as he lost his life during the ensanguined battles. Following Owen's demise, Theofania remained in Falconworth. The people of the village unaware of the bloodlines, never expected she would be the one to keep peace and prosperity in Falconworth.



2. With Biatudu looming, Theofania wanted to develop a plan to protect Falconworth. The future heroine perplexed on how to stop a dragon, sketched out a diagram of the perimeter of the village. Theofania brainstormed and knew the perimeter needed protection. But how?



Read "A Plan of Defense" and utilize the diagram on the following page to answer the questions for TDS: SC 2 in your student companion.



TDS: SC 2

A Plan of Defense

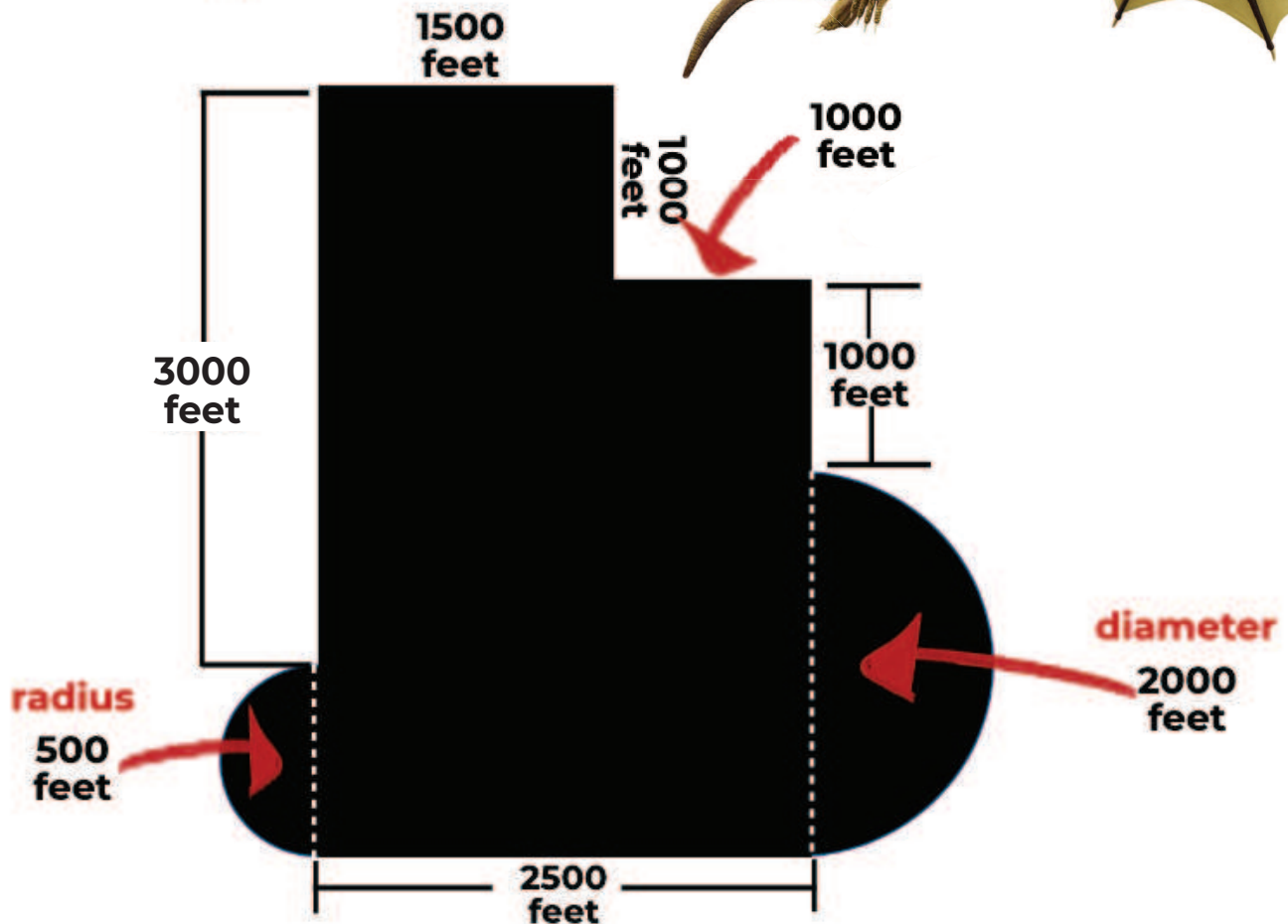


Defending



Falconworth

The Village of Falconworth



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Theofania the Dragonslayer

A Plan of Defense



TDS : SC 2

A Plan of Defense

1. What does the word consternation mean as used in paragraph 1?

- a. peace
- b. tranquility
- c. anxiety
- d. confidence

2. What is the most likely purpose of paragraph 1?

- a. to introduce Theofania as the main character
- b. to set the mood
- c. to describe a conflict
- d. to foreshadow an event



3. Which of the following is the main idea of "A Plan of Defense?"

- a. ending the reign of terror set forth by Biatudu the Dragon would be a challenge
- b. the differences between dragons and the people of Falconworth
- c. introduce Theofania as the main character and the role she will play in bringing peace and prosperity to the Village of Falconworth
- d. to highlight the plights of the people of Falconworth.

4. Which of the following is approximately the perimeter of the Village of Falconworth? Utilize the diagram of the Village of Falconworth. Diagram can be found on the previous page.

use 3.14

- a. 10,250 feet
- b. 14,640 feet
- c. 20,420 feet
- d. 14,710 feet

5. Which of the following is approximately the area of the Village of Falconworth? Utilize the diagram of the Village of Falconworth. Diagram can be found on the following page.

use 3.14

- a. 10,962,500 square feet
- b. 12,462,500 square feet
- c. 120,580 square feet
- d. 9,820,000 square feet





Theofania the Dragonslayer

How Do You Shoo a Dragon?



Design a plan that Theofania could use to protect the village of Falconworth. Your plan must be designed to defend the perimeter of the village and "SHOO" Biatudu away.



PLEASE DO NOT SLAY OR CATCH BIATUDU! YOUR PLAN SHOULD "SHOO" BIATUDU AND MAKE HIM RETREAT TOWARDS HIS CASTLE.



Options on the following page

What's Your Plan?

Option 1

Write a letter to Theofania attempting to persuade her to use your plan to protect the perimeter of Falconworth and "SHOO" Biatudu away. Be sure to describe your plan to her.

Option 2

Construct a diagram with labels. Be sure to bullet point the strategy to protect the perimeter of Falconworth and how you are going to "SHOO" Biatudu away.

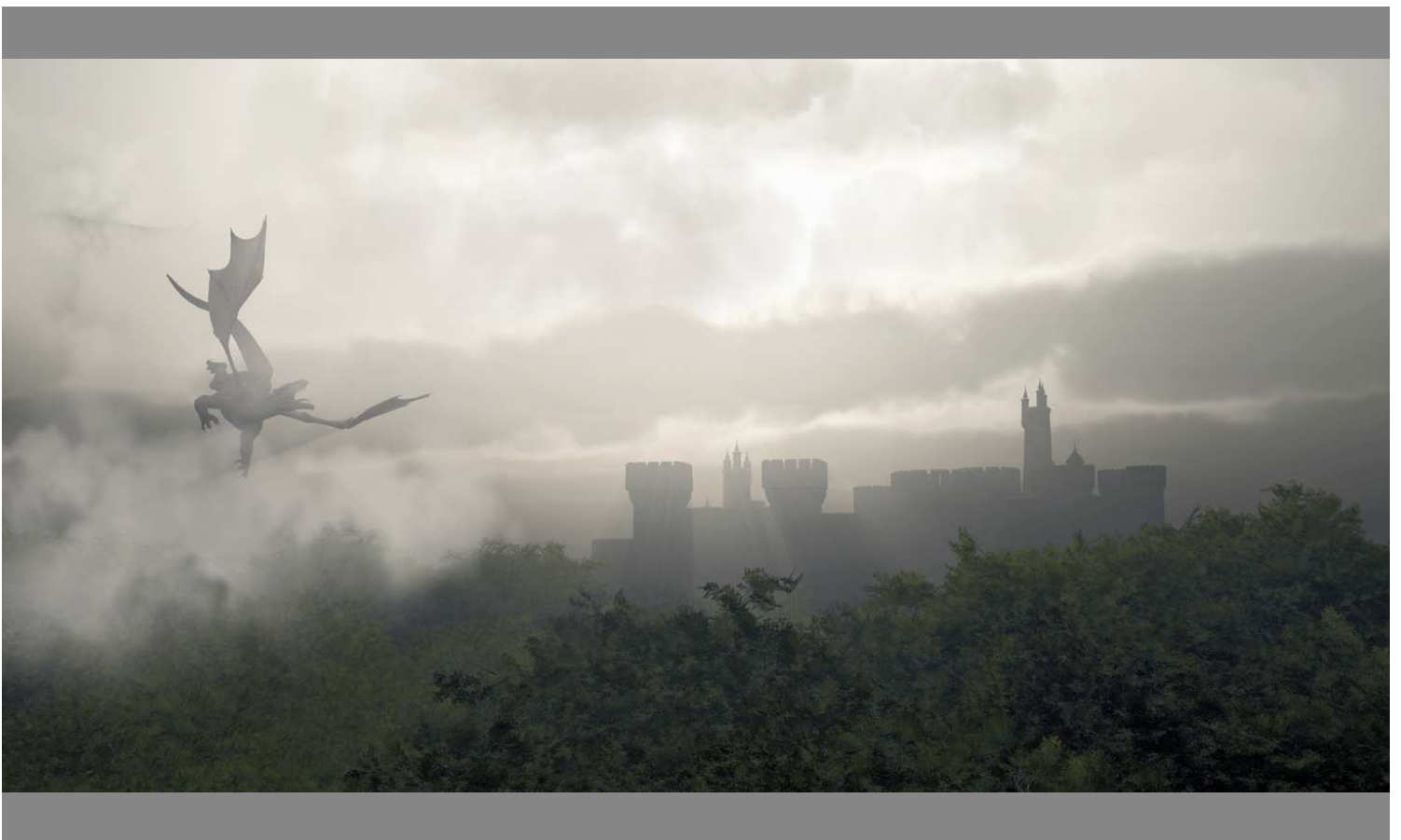
Option 3

Create a two-minute video or "infomercial" on "How to Shoo a Dragon."

Be Creative!!!



Biaturdu's Uncertainty





Theofania the Dragonslayer Biatudu's Uncertainty



Your plan to "shoo" Biatudu away, made him face uncertainty for the first time. Biatudu took flight and headed back to Windmontley Castle. Windmontley Castle is where Biatudu stored and protected his treasures. To her astonishment, Theofania knew this was her opportunity to put an end to Biatudu's reign of terror. After all, Biatudu absolutely incinerated nine villages before his attempt to cremate Falconworth.



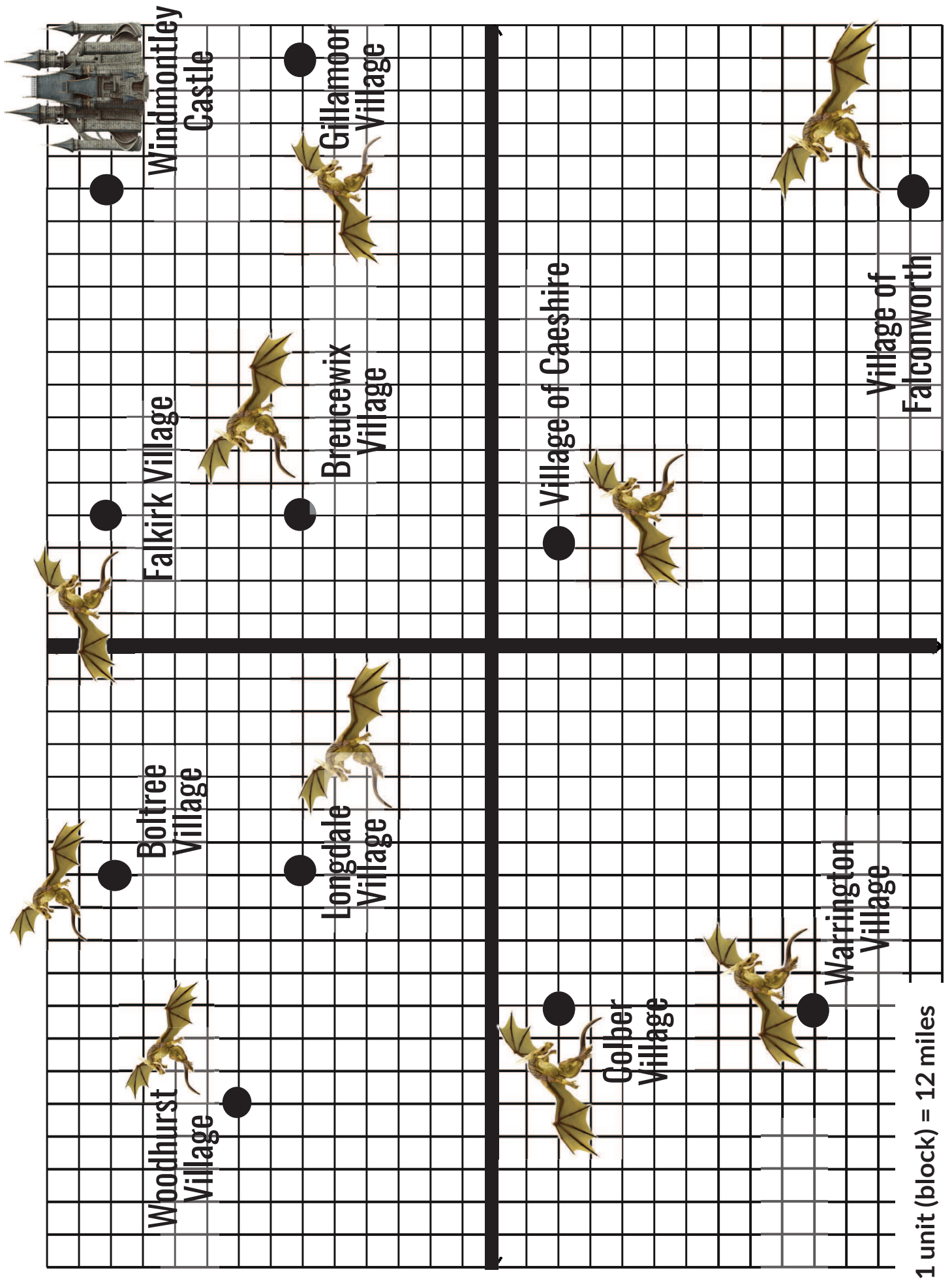
Use the coordinate grid on the following page to help you answer the questions for TDS: SC 3 in your student companion.



TDS : SC 3

Biatudu's Uncertainty







TDS : SC 3

Biatudu's Uncertainty

1. Match each of the following locations with its coordinates.

Choice

Match

Colber Village

Breucewix Village

Warrington Village

Longdale Village

Falkirk Village

Boltree Village

Windmontley Castle

Gillamoor Village

Village of Falconworth

Woodhurst Village

Village of Caeshire





Theofania the Dragonslayer

Biatudu's Uncertainty



TDS : SC 3

Biatudu's Uncertainty continued

2. Four locations are represented in **Quadrant I**. Three of the locations are villages that Biatudu destroyed. The other location is Windmontley Castle. What type of polygon does the four locations create?

a. triangle
b. pentagon
c. hexagon
d. quadrilateral

3. What is the area of the polygon formed by Falkirk Village, Breucewix Village, Gillamoor Village, and Windmontley Castle?

a. 72 square miles
b. 12,096 square miles
c. 10,368 square miles
d. 5,760 square miles



4. The coordinates for Boltree Village, Longdale Village, Breucewix Village and Falkirk Village construct a polygon. What is the area of the formed polygon?

a. 9504 square miles
b. 34 square miles
c. 10,420 square miles
d. 340 square miles

5. Utilizing the same polygon constructed in question 4, answer the following question. If x equals the amount of feet in each unit (block), which of the following could be an equation to represent the perimeter of the rectangle?

a. $17x = 34$
b. $2(11x + 6x) = 408$
c. $2(12x + 11) = 408$
d. $12x = 348$





Theofania the Dragonslayer

Biatudu's Uncertainty



TDS : SC 3

Biatudu's Uncertainty continued

6. Colber Village, Warrington Village, and the Village of Caeshire form which of the following?

- a. trapezoid
- b. right triangle
- c. Isosceles triangle
- d. equilateral triangle

7. Utilizing the same polygon formed in question 6, calculate the area of the formed polygon.

- a. 8064 square miles
- b. 7920 square miles
- c. 112 square miles
- d. 528 square miles



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8. How many miles are between Colber Village and the Village of Caeshire?

- a. 156 miles
- b. 120 miles
- c. 168 miles
- d. 14 miles

9. If Biatudu leaves Longdale Village and flies 192 miles south and then flies 132 miles west, which of the following coordinates would represent Biatudu's new location?

- a. (-7 , -12)
- b. (-18 , -10)
- c. (6 , -10)
- d. (3 , -8)

10. How many miles are between the Village of Falconworth and Windmontley Castle?

- a. 26 miles
- b. 300 miles
- c. 288 miles
- d. 444 miles





Theofania the Dragonslayer

The Race to Windmontley Castle





Theofania the Dragonslayer

The Race to Windmontley Castle



As Biatudu retreated to Windmontley, he had a **70-mile head start**. Theofania traveling at a speed of **300 miles per hour**, wanted to try to catch Biatudu before he reached his castle. Biatudu could fly at a constant rate of **240 miles per hour**.



Utilize the information provided on the following page to help you answer the questions for TDS: SC 4 in your student companion.



TDS : SC 4

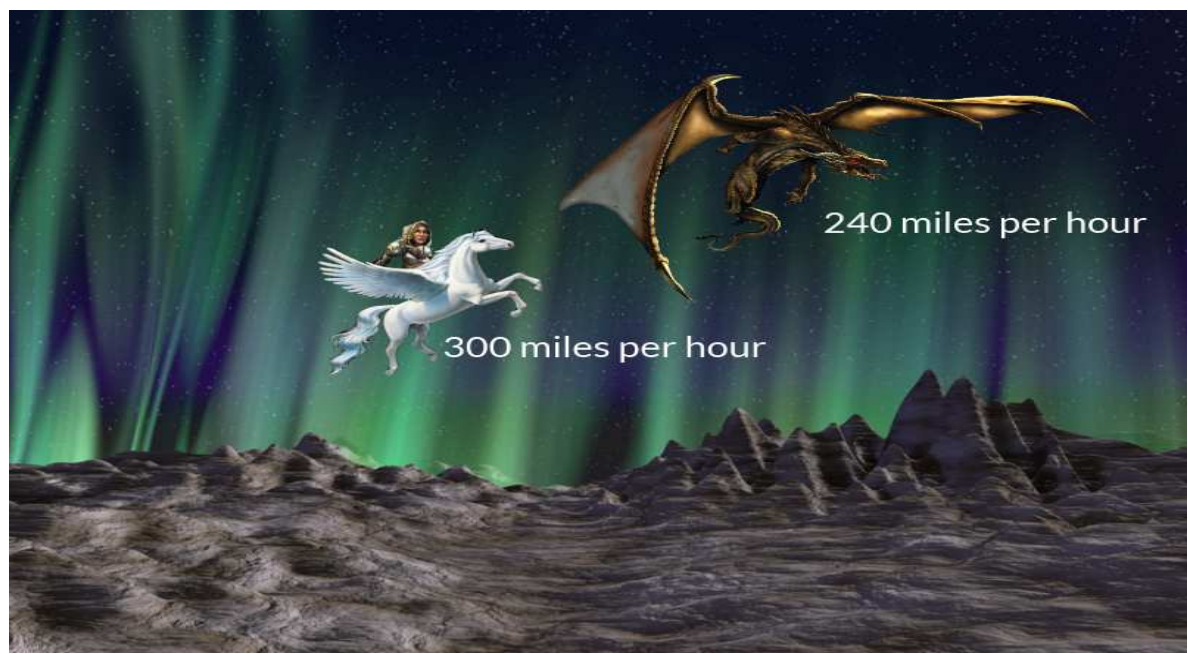
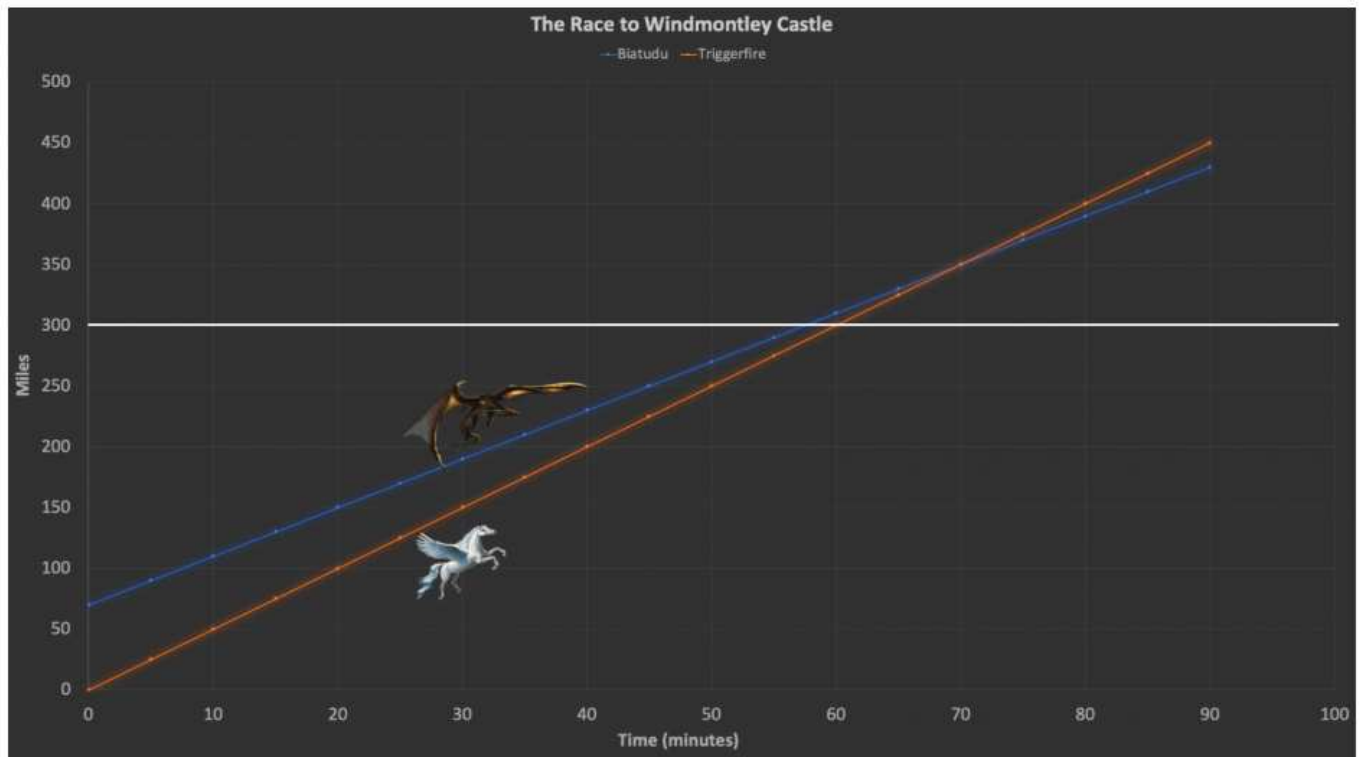
The Race to Windmontley Castle





Theofania the Dragonslayer

The Race to Windmontley Castle





Theofania the Dragonslayer

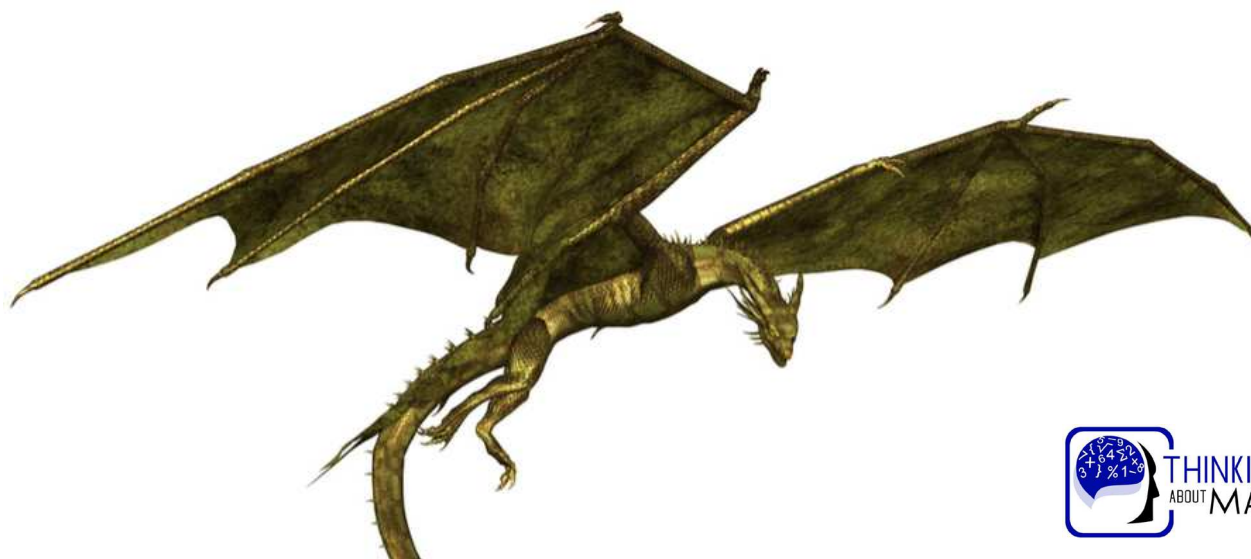


TDS : SC 4

The Race to Windmontley Castle

The Race to Windmontley Castle

- | | |
|--|---|
| <p>1. Biatudu could fly at a constant rate of 240 miles per hour. Calculate the unit rate in minutes. In other words, how far can Biatudu fly in one minute?</p> <ul style="list-style-type: none">a. 24 miles per minuteb. 4 miles per minutec. 60 miles per minuted. 8 miles per minute | <p>2. Triggerfire could fly at a constant rate of 300 miles per hour. Calculate the unit rate in minutes. In other words, how far can Triggerfire fly in one minute?</p> <ul style="list-style-type: none">a. 60 miles per minuteb. 30 miles per minutec. 10 miles per minuted. 5 miles per minute |
| <p>3. The white line on the line graph represents which of the following?</p> <ul style="list-style-type: none">a. The distance in miles from the Village of Falconworth to Windmontley Castleb. The constant speed at which Triggerfire needs to travel to arrive at Windmontleyc. The total time needed to arrive at Windmontley Castled. The constant speed at which Biatudu needs to travel to arrive at Windmontley Castle | <p>4. The point of origin on the line graph (0, 0) represents which of the following?</p> <ul style="list-style-type: none">a. The Village of Falconworthb. Windmontley Castlec. Colber Villaged. Village of Caeshire |





The Race to Windmontley Castle

The Race to Windmontley Castle
continued

5. Which of the following tables corresponds with the line graph?

a.

Time (minutes)	Triggerfire (miles)	Biatudu (miles)
0	0	70
10	50	110
20	100	150
30	150	190
40	200	230
50	250	270
60	300	310

b.

Time (minutes)	Triggerfire (miles)	Biatudu (miles)
0	0	0
10	50	70
20	100	140
30	150	210
40	200	250
50	250	290
60	300	330



THINKING
ABOUT MATH

c.

Time (minutes)	Triggerfire (miles)	Biatudu (miles)
0	25	70
10	50	90
20	75	110
30	100	130
40	125	150
50	150	170
60	175	190

d.

Time (minutes)	Triggerfire (miles)	Biatudu (miles)
0	0	0
10	300	240
20	600	480
30	900	720
40	1200	960
50	1500	1200
60	1800	1440



Theofania the Dragonslayer

The Race to Windmontley Castle



TDS : SC 4

The Race to Windmontley Castle continued

6. Which of the following equations represents the time in minutes (x) and the distance traveled in miles (y) for Biatudu?

- a. $y = 4x$
- b. $y = 240x$
- c. $y = 4x + 70$
- d. $y = 240x - 70$

7. Which of the following equations represents the time in minutes (x) and the distance traveled in miles (y) for Triggerfire?

- a. $y = 5x$
- b. $y = 300x$
- c. $y = 60x$
- d. $y = 300x + 70$



THINKING
ABOUT MATH

8. Which of the following ordered pairs (time, distance) represents Biatudu's arrival at Windmontley Castle?

- a. (57.5, 300)
- b. (0, 300)
- c. (60, 310)
- d. (60, 300)

9. Which of the following ordered pairs (time, distance) represents Triggerfire's arrival at Windmontley Castle?

- a. (40, 300)
- b. (60, 300)
- c. (0, 0)
- d. (60, 310)

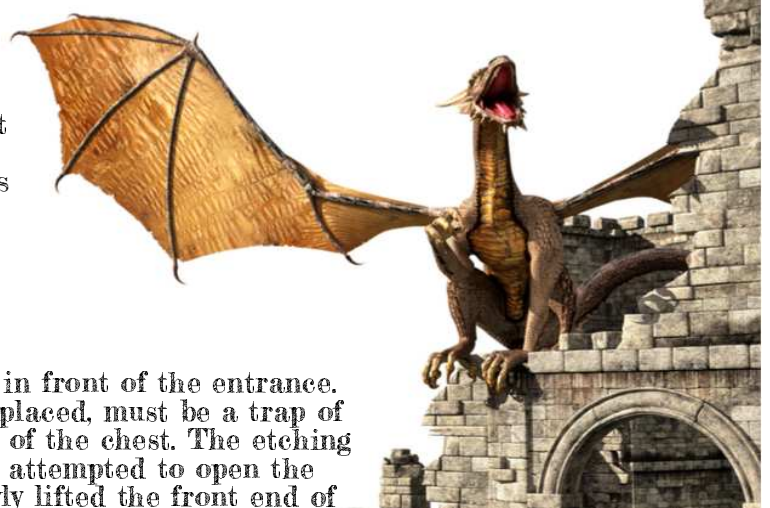


Biatudu's Lair





Biatudu's Lair



1. As Biatudu sped his way to Windmontley Castle, he had one thing in mind- get to his lair. Biatudu's lair was well within the depths of the castle. His lair is where he protected not only himself but also his prized treasures. When Biatudu circumnavigated his way into his lair, the drawbridge to Windmontley was left open. TriggerFire bent the throttle into the castle opening. Theofania exited her speedy mare and immediately began to search for the sequestered lair.
2. Theofania approached a door with a chest in front of the entrance. This had to be Biatudu's lair. The chest, oddly placed, must be a trap of some sort. There was an inscription on the top of the chest. The etching stated, "KEY INSIDE." Theofania imperceptibly attempted to open the chest. The chest would not open. She then slowly lifted the front end of the chest to take a look underneath the chest. Theofania noticed some form of a trigger. Therefore, she quickly placed the chest back down. Theofania assumed that she had to get the chest open, but she was fearful of just using her sword to break it open. She thought it would somehow set the trigger off and put something horrible into motion. Surely this is what transpired with the lackluster efforts from all the gallant knights before her. Theofania came up with an idea. She thought maybe if she could get another chest the same size to the original, she might be able to expeditiously slide the chest with the key inside and replace it with the other without setting off the trigger. But where to find a chest?





What do you think is inside Biatudu's Lair? Write a paragraph describing your thoughts of what waits Theofania.



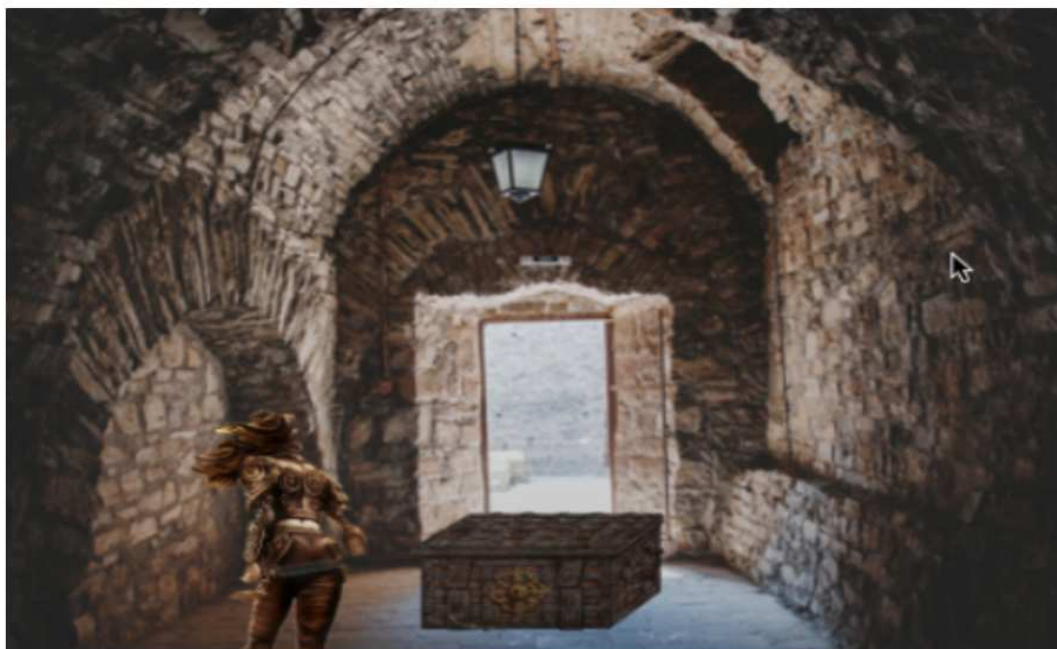
Biaturdu's Chest





Theofania the Dragonslayer

Biatudu's Chest



Theofania Needs Your Help!



TDS: SC 5 on the following page





Theofania the Dragonslayer

Biatudu's Chest



Here is what you need to do:

You will need 0.5 or 1-centimeter grid paper and a ruler.

Construct a flat pattern (net) of the chest (rectangular prism). You will need to create a scale to make the scaled-down chest proportional to the original chest. Your flat pattern (net) must fold into a rectangular prism with no overlap.

Calculate the surface area of your flat pattern.

Trace your flat pattern on construction paper or cardstock. Decorate your chest. Now you can have a competition with your classmates. Vote on the best medieval chest!



EXTEND



YOUR THINKING





Theofania the Dragonslayer Biatudu's Chest



TDS: SC 5

Biatudu's Chest

1. Which of the following represents the volume of Biatudu's Chest?

- a. 90 and $\frac{1}{5}$ cubic inches
- b. 24,000 and $\frac{1}{20}$ cubic inches
- c. 25,053 and $\frac{1}{20}$ cubic inches
- d. 2,400 and $\frac{1}{10}$ cubic inches

2. Which of the following represents the surface area of Biatudu's Chest?

- a. 5,340 and $\frac{17}{20}$ square inches
- b. 5,200 and $\frac{3}{20}$ square inches
- c. 52,240 and $\frac{1}{4}$ square inches
- d. 5,420 and $\frac{1}{10}$ square inches



3. If you take the original dimensions of Biatudu's Chest and cut them in half, which of the following would happen to the chest's volume?

- a. The volume of the chest would not change.
- b. The volume of the chest would decrease by 2 times the original volume.
- c. The volume of the chest would decrease by 8 times the original volume.
- d. The volume of the chest would decrease by 4 times the original volume.

4. If you wanted to create a replica of Biatudu's Chest that had the same volume but less surface area, which of the following directions would you need to follow?

- a. Take the largest dimension and cut it in half. Take the smallest dimension and double it. Finally, make no change to the remaining dimension.
- b. Take each of the dimensions of the original chest and cut them in half.
- c. Take the largest dimension and double it. Then, double the smallest dimension. Finally, make no change to the remaining dimension.
- d. Take each dimension of the chest and double them.



Biaturdu's Fate



Biatudu's

Fate

1. Filled with anxiety, Theofania swiftly exchanged the chests. It worked! The trigger did not ignite disaster! Then, the original chest awaited its fate. Theofania took her sword and completely **dismantled** the chest with an **expeditious** blow. There lies the key along with a paper with coordinates. Theofania picked up the key, paper and took a deep breath. What waits for her behind this door. She inserts the key, turns and the door unlocks.

A (15,15) F (15,0)

B (-15,15) E (15,-15)

C (-15,0) D (-15,-15)





Theofania the Dragonslayer Biatudu's Fate



TDS : SC 6

Biatudu's Fate

1. Evaluate the coordinates found on the paper from Biatudu's Chest. What polygon would the coordinates form if plotted on a coordinate plane?
 - a. hexagon
 - b. pentagon
 - c. rectangle
 - d. decagon
2. If Statue A needed to be translated 15 feet West, which of the following would represent the statue's new location?
 - a. (15,5)
 - b. (0,15)
 - c. (30,15)
 - d. (30,0)
3. If Statue E needed to be translated 10 feet North, which of the following would represent the statue's new location?
 - a. (30,15)
 - b. (15,0)
 - c. (15,-5)
 - d. (0,-15)
4. If Statue C needed to be translated 5 feet South, which of the following would represent the statue's new location?
 - a. (-15,-5)
 - b. (-10,0)
 - c. (-5,10)
 - d. (5,-15)
5. If Statue B needed to be translated 10 feet South, which of the following would represent the statue's new location?
 - a. (-5,15)
 - b. (-20,15)
 - c. (-15,10)
 - d. (-15,5)





Theofania the Dragonslayer Biatudu's Fate



TDS : SC 6
Biatudu's Fate

6. If Statue F needed to be translated 5 feet North, which of the following would represent the statue's new location?

- a. (15,5)
- b. (5,10)
- c. (15,-5)
- d. (0,15)

7. If Statue D needed to be translated 15 feet East, which of the following would represent the statue's new location?

- a. (-15,0)
- b. (0,-15)
- c. (0,15)
- d. (-5,15)



THINKING
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8. After Theofania moves the statues to their new coordinates, what polygon would the coordinates form if plotted on a coordinate plane?

- a. pentagon
- b. square
- c. decagon
- d. hexagon

9. Which of the following represents the area of the newly formed polygon?

- a. 600 square feet
- b. 900 square feet
- c. 775 square feet
- d. 350 square feet

10. What is the difference in the area from the polygon formed with the originally placed statues and the polygon formed from the newly placed statues?

- a. 300 square feet
- b. 900 square feet
- c. 450 square feet
- d. 1200 square feet



Biatudu's Fate

Theofania enters the lair. Biatudu awaits with treasures surrounding him. He seems paralyzed as if he is **astonished** by the entry of Theofania. Theofania quickly surveys the room. She sees statues surrounding Biatudu in the locations of the coordinates listed on the paper from the chest. The statues must have significance. With Biatudu still paralyzed with disbelief, she moves about the lair sliding each statue.



When the final statue was moved a poisonous gas was released. The poisonous gas knocked out Biatudu.



You know what happens next.....

Wondering why the gas did not affect Theofania? Come on, it is a mythical tale and the heroine can't die.

EXTEND



YOUR THINKING

Write an alternate ending to Theofania the Dragonslayer. What do you think should happen when Theofania enters Biatudu's Lair? Sounds like another creative writing opportunity!



Maybe.....





COMING SOON!

CORNER POCKET



Geometry

ENTER THE LAIR

