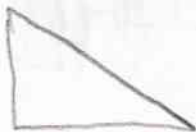
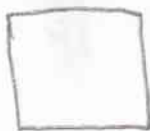


# Todd and the adventure to the Palace of Squares.

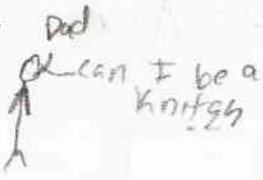
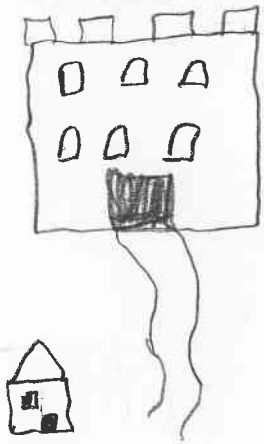


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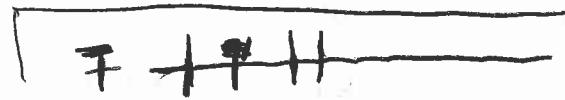
Tyler Davis

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Nick Wiese



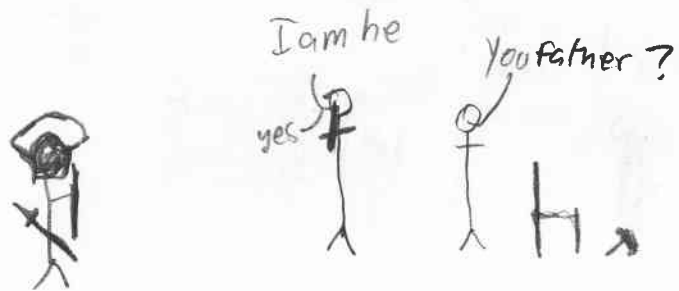
One day long ago, there was a boy named Todd that lived in the Village of Unitssquared. He was the son of the town carpenter, but his sole desire was to be a knight of the Kingdom of Ares.



"Is the Master of Ares here?"



One day while he was helping his father in his shop, a man in a suit of armor came riding through town and stopped at the shop. "Is there one here that goes by the name of 'The Master of Ares'?" his presence is needed to solve the King's problem.



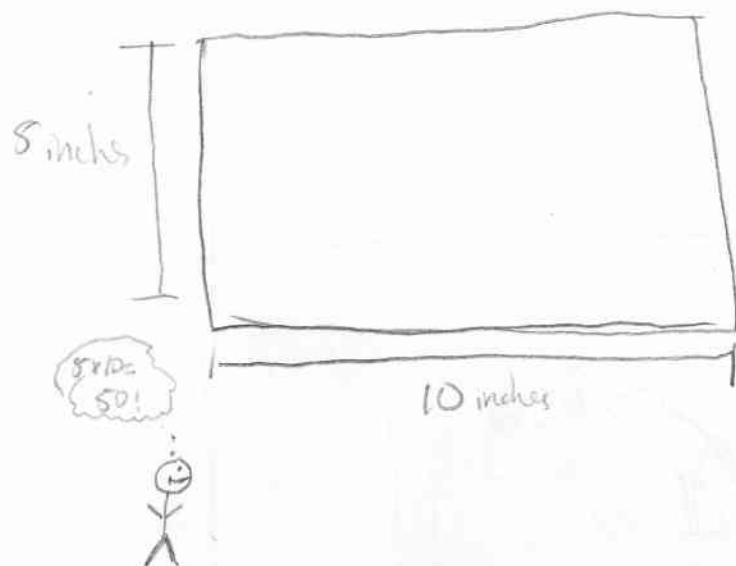
"Father, who is this knight which he calls for?" Todd asked as the knight passed by. He looked up and saw his father walking towards the strange knight. "You there!" called his father. "I am the knight that you seek." Todd looked at his father with astonishment. "You father?" "Yes son me." He replied as he led the knight back to the workshop.



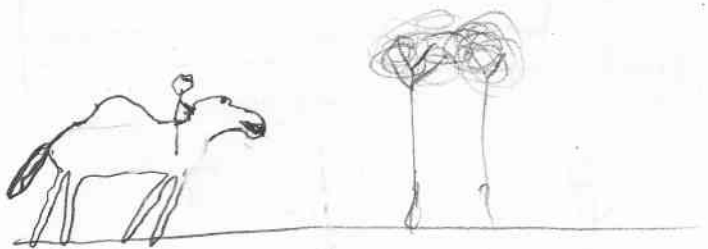
"So you need me to go to the palace of Squares to solve puzzles for the king? I cannot, leave my shop, I am sorry." The knight's face was crestfallen, but then Todd spoke up. "I could go, I've always wanted to be a knight." Todd's father thought about it for many minutes, until he finally said, "Fine you can go." He said with a smile.



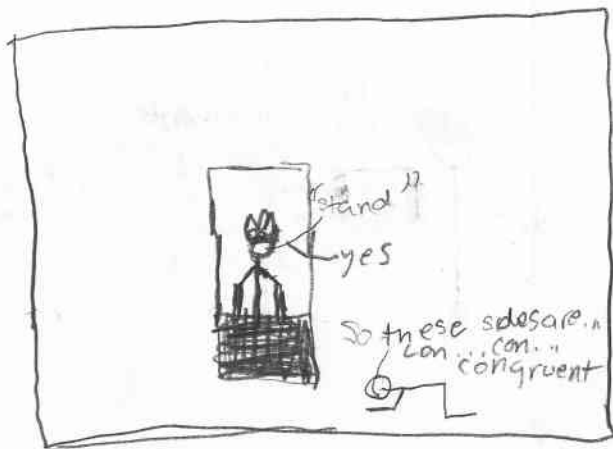
Todd nodded to his father and turned to the knight. "I will go with you sir..." "My name is Sir Paul E. Gon." "Alright then Sir Gon. I am ready to travel with you to the Palace of Squares." Todd said happily. "Just remember this piece of wisdom before you leave son," his father said, "The area of a rectangle or square is always its base  $\times$  height." "I'll remember dad, I promise!" Todd called back as he rode out of town with Sir Paul E. Gon.



Many days later, when the two companions had nearly reached the palace of squares, Todd decided to try out his dad's rule about finding out the area of the map that they were using. When they had made camp for the night he brought out the map and measured the base and height of the rectangular map. "Well it's ten inches across its base and five inches tall. Let me think,  $10 \times 5 = 50$  or 50 inches squared!" He asked Sir Paul E. Gon and found that he indeed was right; Todd felt pleased and went to sleep ready for any challenge of the kings.



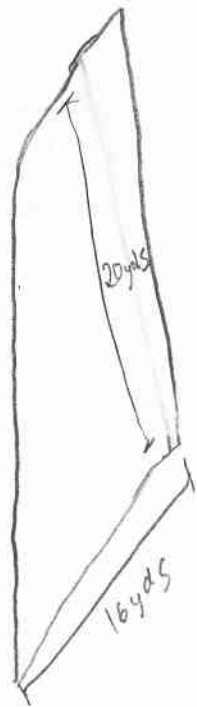
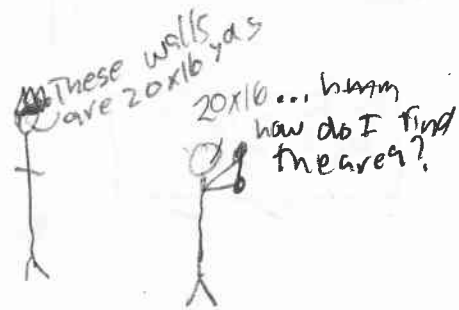
Early the next day Sir Paul E. Gon woke Todd and they rode at last to the Palace of Squares. Once there they were immediately ushered into King Congruency's chambers and he told them of his problem. "The wizard of Parallel cast a curse on me, and if I cannot find the area of these three shapes, my kingdom will crumble and the people will be kingless." "Show me the shapes King Congruency."



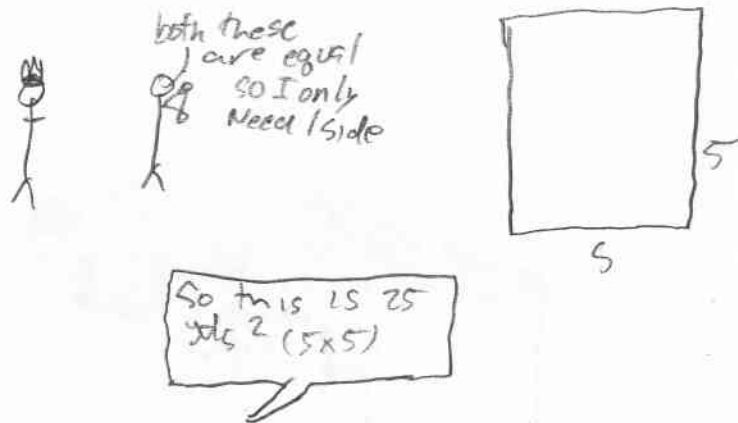
Todd walked into the honored room of congruency, where the King himself entered with awe. Every wall of the huge room was congruent to the one next to it, including the ceiling and floor. Todd stared in wonder at the room, and then noticed three shapes drawn on one of the walls. One was a triangle that looked like it was half of a rectangle because of the right angle in one corner. Another shape was like a rectangle but its sides were exactly the same length. Then Todd looked at the last figure and gasped, it was like an elongated rectangle, but it had no right angles or any height that he could fathom.



"Can you help me young Todd?" The king asked. Todd looked at the shapes and turned to the king "I will do my best, your Majesty." The king thanked him and asked him if he needed any supplies. "Yes I need supplies to write with, did the wizard leave any measurements for the figures?" "Yes on the parchment was." The king said and handed Todd a roll of parchment that said: Triangle - The height and base are in proportion to the height + base of the base of the wall in the proportion of  $1/4$ . The height of the second polygon is 4 yards. The base of the third figure is 6 yards & the height is 4 yards, but beware! The height is only formed by a line to the base making a right angle. To complete this you must also...

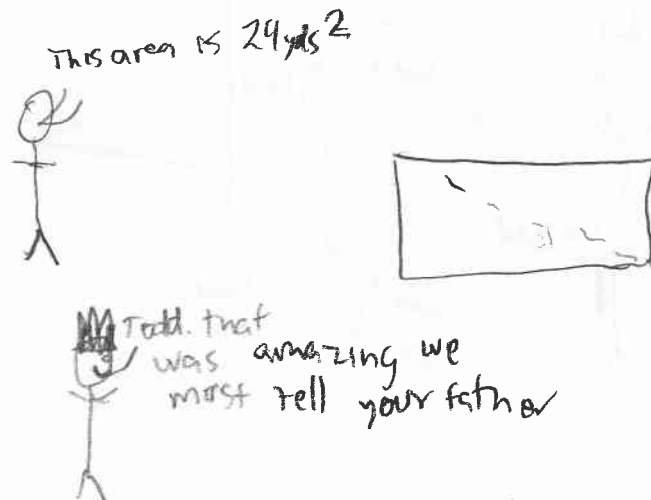


Todd gazed at the first figure and asked, "How tall and wide are these walls?" "20 yards tall by 16 yards long," answered Sir Paul 2. Gon. Todd thought for a minute and then exclaimed "The sides are both 5 yards! But how do I find the area?" he wondered aloud. He noticed that if he drew another triangle up to the top and flipped it over, he got a rectangle with a height & base of 5 yards by 8 yards. That's  $20 \text{ yards}^2$ . But it's only half the rectangle so the area is only 10 yards squared!" "Very good, Todd!" The king exclaimed. The King! Todd moved on to the second figure and frowned, Why was only the height given to him?

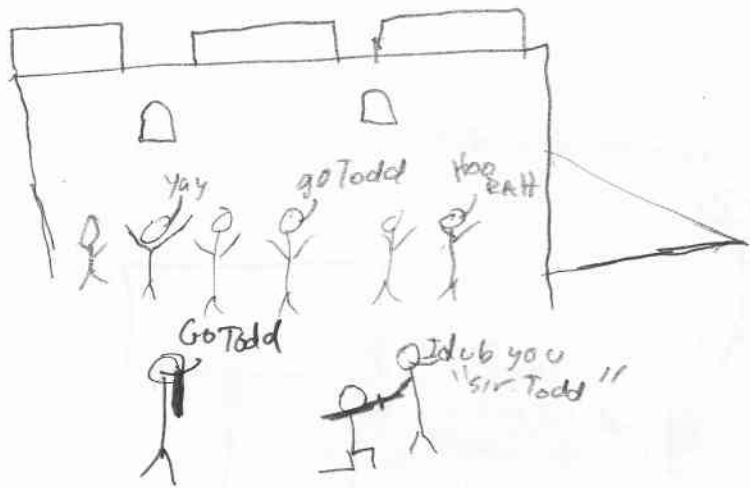


He looked and saw that the sides of this shape were equal. That's why he only had the height, both measures were the same! He quickly multiplied 5 ~~by 5~~ and got 25 yards squared for the area of the second figure. He then turned to the third and frowned. How was he supposed to find the height of this strange shape? For without the height you couldn't find the area. He puzzled over the shape for a long time until he heard Sir Paul E. Gon say, "Try to find figures within the shape, I cannot but perhaps you can

well done Todd...



Todd looked hard and finally drew a line from a vertex to the base and then he saw it! A rectangle would appear if he moved the triangle he formed with the line to the other side of the shape! he quickly found the area to be 24 yards squared. He drew in the line - called an altitude and labeled it's the height. All at once a deep voice shook the room, "Well done Todd, you are the first person to correctly find the height of my parallelogram!" said the wizard of parallels, stepping into the room. The king was overjoyed and sent word to Todd's father to



come and witness the knighting of his son.

One day later, many people gathered in the courtyard to see young Todd be knighted by the king. "And from this day forth, you shall be known as the new master of Acre, Sir Todd!" proclaimed the king. The crowd went wild and when Todd stood, he saw his father smiling and cheering for him. Sir Todd's achievement on to achieve many great things as a knight, and is to this day the most renowned master of Acre in the world.

## Resources

- Geometry for challenge + enjoyment, McDougall Littell / Houghton Mifflin