

**2013 Wyoming State FFA CDE
Agricultural Technology and Mechanical Systems
Machinery and Equipment Systems Activity- Small Baler**

You are the manager of the student farm facility at the University of Wyoming. After a long dry winter your responsibilities with managing the haying season is fast approaching. You have pulled your Massey Ferguson 1839 small baler out of storage and need to identify different specialized parts of the baler to make sure they are functioning correctly for the haying season and to provide maintenance if needed.

Match the number, attached to a part on the baler, with the corresponding name.

	Part Number	Part Name		Part Number	Part Name
a.	4	Double tine	f.	6	PTO shaft shield
b.	5	Flywheel	g.	1	Twine box
c.	9	Knotter Head	h.	2	Twine tension support
d.	10	Knotter Gear	i.	3	Twine tension support guide
e.	7	Pickup gauge wheels	j.	8	Wind guard tine

You have provided the necessary maintenance to get the baler ready for the season and the baler has been working well. You are now tasked with transporting the hay for storage. You have available for your use an enclosed stock trailer which measures **6' X 6'2" X 16'**. In order to save on labor costs, you need to minimize the number of loads between the field and the Beef Unit where it will be stored. Considering a bale size of **14" X 18" X 3'**, and regardless of how the bales are stacked, what is the calculated maximum number of bales that can fit in the trailer? Do not consider axle weight or towing ability of the truck in this scenario, simply the cargo area of the trailer itself.

1. What is the cargo capacity of the trailer in Cu. Ft.? $6' \times 6'2" \times 16' = 72" \times 74" \times 192" = 1,022,976 \text{ cu. in.}$ $1,022,976 / 1728 \text{ cu. in.} = 592 \text{ cu. ft.}$
2. According to your calculations, how many bales will fit in the trailer to be transported?
 $14" \times 18" \times 36" = 9072 \text{ cu. in.}$ $9072 / 1728 = 5.25$ $592 \text{ cu. ft.} / 5.25 = 112.76 \text{ bales}$
3. Considering that your trailer weighs 2,830 lbs. and is a dual axle with a rated capacity of 3500 pounds per axle, the number of bales calculated per trailer with a per bale weight of 80 lbs., Will this trailer be sufficient to haul the number of bales you calculated?
 $112.76 \text{ bales} \times 80 \text{ lbs. per bale} = 9020.80 \text{ lbs}$ NO

Criterion	Points Possible	Points Earned
Parts ID	10 (2 points each)	
Calculations	3 (2 point each)	
Safety	4 (recorded by skill proctor)	