Class Starters & Enders

Making the Most of Instructional Time
Five Minute Lessons

Class Starters and Enders help utilize the last minutes of class when a lesson ends but there is not enough time to start another, or for an interest approach at the beginning of class. Mini-lessons correlate to GPS in the programs areas below.

Horsepower

Program Areas: Automotive, Engineering, Agriculture Mechanics

Instructions: Read the material and make notes of important points, answer questions, and be ready to discuss this topic.

What is horsepower? If you ask someone, they may guess that horsepower is the amount of power a number of horses can generate, and that guess would be close. There is a little history behind the measurement of horsepower, and it starts with a man whose name you know very well: James Watt, the Scottish inventor and engineer whose name is used in the International System of Units measuring of the rate of energy conversion: watts. James Watt wanted to market his improved steam engine, and had made a deal with companies that purchased his engine; James was to receive one third of the amount of money that companies saved on coal using his engine. The only problem with that deal was that not all companies used coal for power. A large portion of companies used horses. To create a working relationship with companies using horses, James calculated the average power of a horse into this formula: $\frac{33000 ft \cdot lb}{min}$. This formula means that an average horse can carry any combination of a feasible weight for a feasible distance with the product of the two numbers equaling 33,000. This means a horse can reasonably carry 100 pounds for 330 feet in one minute, or it can carry 1000 pounds for 33 feet in one minute, or even 33 pounds of coal for 1000 feet in one minute. This unit of measurement is now known as mechanical horsepower, but horsepower has been converted into several units of measurement, extending into metric horsepower, electrical horsepower, boiler horsepower, hydraulic horsepower, and several other units of measurement varying in different applications of engineering and from country to country. While horsepower is used internationally, it is not recognized in the International System of Units. Even still, car companies continue to use the unit when advertising cars, and the world of engines seems intent on keeping the measurement around for a long time.

Review Questions

1. Who devised the unit of horsepower?
2. Is horsepower accepted as an international unit of measurement?
3. How many horsepower would it take to carry 1320 pounds 100 feet in one minute?
4. How many horsepower would it take to carry 66 pounds 1000 feet in 30 seconds?
5. Why did James Watt devise this unit of measurement?
6. Why is this unit of measurement important to know in varying fields of engineering?
7. Could the world do away with horsepower, using other standard units instead?
8. Why do you think horsepower is so popular that is has survived as a non-standard unit?
9. Is there another animal relevant enough to have a unit of power named after it, like Hamster-power?
10. How does this unit of measurement reflect the way we engrain tools into our culture?

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