

# Horsepower Quiz

Name Key

Solve the following using the horsepower formula. Show work and use appropriate units.

1. For a small engine to lift 725 lbs a distance of 250 ft in one minute, how much horsepower would be needed?

$$HP = \frac{d \cdot w}{33000}$$

$$HP = \frac{250(725)}{33000} = \boxed{5.5 \text{ hp}}$$

2. How much horsepower is needed for an engine to lift 2500 lbs a distance of 425 ft in one minute?

$$HP = \frac{(425)(2500)}{33000} = \boxed{32 \text{ hp}}$$

3. For an engine that has 35 hp, solve for the distance if the weight is 3000 lbs.

$$35 = \frac{d \cdot 3000}{33000}$$

$$\frac{1155000}{3000} = \frac{3000d}{3000} \quad \boxed{d = 385 \text{ ft}}$$

4. For an engine that has 450 hp, solve for the distance if the weight is 3750 lbs.

$$450 = \frac{d \cdot 3750}{33000}$$

$$\frac{14850000}{3750} = \frac{3750d}{3750} \quad \boxed{d = 3960 \text{ ft}}$$

5. For an engine that has 500 hp, solve for the weight if the distance is 25000 ft.

$$500 = \frac{25000 W}{33000}$$

$$\frac{16500000}{25000} = \frac{25000 W}{25000} \quad \boxed{W = 6600 \text{ lbs}}$$

6. For an engine that has 80 hp, solve for the weight if the distance is 1500 ft.

$$80 = \frac{1500 \cdot W}{33000}$$

$$\frac{2640000}{1500} = \frac{1500 W}{1500} \quad \boxed{W = 1760 \text{ lbs}}$$