

Horsepower Worksheet

Name Key

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

1. How much horsepower is needed for an engine to lift $\overset{w}{800}$ lbs a distance of $\overset{d}{3000}$ ft in one minute?

$$HP = \frac{d \cdot w}{33000}$$
$$HP = \frac{3000(800)}{33000} = \boxed{73 \text{ hp}}$$

2. For a small engine to lift $\overset{w}{600}$ lbs a distance of $\overset{d}{100}$ ft in one minute, how much horsepower would be needed?

$$HP = \frac{100(600)}{33000}$$
$$\boxed{HP = 1.8 \text{ hp}}$$

3. For an engine that has $\overset{HP}{125}$ hp, solve for the distance if the weight is 5000 lbs.

$$125 = \frac{d \cdot 5000}{33000}$$
$$\frac{4125000}{5000} = \frac{5000d}{5000}$$
$$\boxed{d = 825 \text{ ft}}$$

4. How much horsepower is needed for an engine to lift $\overset{w}{2000}$ lbs a distance of $\overset{d}{1500}$ ft in one minute?

$$HP = \frac{1500(2000)}{33000}$$
$$\boxed{HP = 91 \text{ hp}}$$

5. For an engine that has 50 hp, solve for the weight if the distance is 2500 ft.

$$50 = \frac{2500 w}{33000}$$
$$\frac{1650000}{2500} = \frac{2500 w}{2500}$$
$$\boxed{w = 660 \text{ lbs}}$$

6. For an engine that has 250 hp, solve for the weight if the distance is 300 ft.

$$250 = \frac{300 W}{33000}$$
$$\frac{8250000}{300} = \frac{300 W}{300}$$

$$W = 27500 \text{ lbs}$$

7. How much horsepower is needed for an engine to lift 250 lbs a distance of 800 ft in one minute?

$$HP = \frac{(800)(250)}{33000}$$

$$HP = 6.1 \text{ hp}$$

8. For a small engine to lift 825 lbs a distance of 100 ft in one minute, how much horsepower would be needed?

$$HP = \frac{(100)(825)}{33000}$$

$$HP = 2.5 \text{ hp}$$

9. For an engine that has 350 hp, solve for the distance if the weight is 3750 lbs.

$$350 = \frac{d \cdot 3750}{33000}$$

$$\frac{11550000}{3750} = \frac{3750 d}{3750}$$

$$d = 3080 \text{ ft}$$

10. For an engine that has 55 hp, solve for the distance if the weight is 600 lbs.

$$55 = \frac{d \cdot 600}{33000}$$

$$\frac{1815000}{600} = \frac{600 d}{600}$$

$$d = 3025 \text{ ft}$$