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## Assignment

Date $\qquad$ Period $\qquad$

## Solve each related rate problem.

1) A crowd gathers around a movie star, forming a circle. The radius of the crowd increases at a rate of $8 \mathrm{ft} / \mathrm{sec}$. How fast is the area taken up by the crowd increasing when the radius is 10 ft ?
2) A hypothetical cube grows so that the length of its sides are increasing at a rate of 2 $\mathrm{m} / \mathrm{min}$. How fast is the volume of the cube increasing when the sides are 3 m each?
3) A hypothetical square grows so that the length of its diagonals are increasing at a rate of $8 \mathrm{~m} / \mathrm{min}$. How fast is the area of the square increasing when the diagonals are 9 m each?
4) A hypothetical square grows so that the length of its sides are increasing at a rate of 8 $\mathrm{m} / \mathrm{min}$. How fast is the area of the square increasing when the sides are 11 m each?
5) A spherical balloon is inflated so that its radius increases at a rate of $4 \mathrm{~cm} / \mathrm{sec}$. How fast is the volume of the balloon increasing when the radius is 6 cm ?
6) Water leaking onto a floor forms a circular pool. The radius of the pool increases at a rate of $4 \mathrm{~cm} / \mathrm{min}$. How fast is the area of the pool increasing when the radius is 13 cm ?
7) A spherical snowball is rolled in fresh snow, causing it to grow so that its radius increases at a rate of $3 \mathrm{in} / \mathrm{sec}$. How fast is the volume of the snowball increasing when the radius is 7 in?
