

Warm-up Questions:

Calculate.

a) $-\left(2\frac{1}{4}\right)^2 + 1.5^3$

b) $-5\frac{2}{3} + 3.\overline{6}(0.\overline{3})^2$

1.6

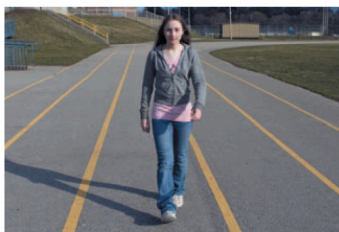
Powers of Rational Numbers

GOAL

Evaluate rational number expressions involving powers.

LEARN ABOUT the Math

Taylor walks one lap around a track. Then, she turns and walks half as far in the other direction. She changes direction again and walks half as far as her previous distance. She changes direction one last time and again walks only half as far as her last distance.



? What fraction around the track is Taylor's final position?

EXAMPLE 1

Solving a problem involving powers of rational numbers

Determine Taylor's final position on the track.

EXAMPLE 2 Evaluating an expression with negative decimal bases

Calculate $(-3.2)^2 - 2(-6.5)^3$.

EXAMPLE 3 Evaluating an expression with negative fraction bases

Calculate $-2\frac{2}{3} + \left(-1\frac{3}{4} - \frac{5}{6}\right)^2$.

EXAMPLE 4 Solving a problem involving powers of rational numbers

Josée worked at the mall this summer to help pay for her future university education. She invested \$3000 in an account earning interest at a rate of 3.5% per year. How much money will her investment be worth in 4 years?

Invest to Earn

*The Magic of
Compounding*

$$A = P(1 + i)^n$$

A = future value of investment
 P = amount of money invested
 i = decimal value of the interest rate
used each time interest is earned
 n = number of times interest is earned
while money is invested