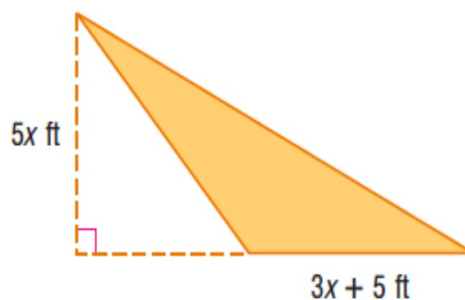


PERSONAL FINANCE Toshiro has \$850 to invest. He can invest in a savings account that has an annual interest rate of 3.7%, and he can invest in a money market account that pays about 5.5% per year. Write a polynomial to represent the amount of interest he will earn in 1 year if he invests x dollars in the savings account and the rest in the money market account.

$$\begin{aligned}
 &3.7\%x + 5.5\%(850 - x) \\
 &0.037x + 0.055(850 - x) \\
 &0.037x + 46.75 - 0.055x \\
 &46.75 - 0.018x
 \end{aligned}$$

GEOMETRY Find the area of the triangle.

$$\begin{aligned}
 A &= \frac{1}{2}bh \\
 &\frac{1}{2}(3x+5)(5x) \\
 &\frac{15x^2 + 25x}{2}
 \end{aligned}$$



Review:

Key Concept

Negative Exponents

- **Words** For any real number $a \neq 0$ and any integer n , $a^{-n} = \frac{1}{a^n}$ and $\frac{1}{a^{-n}} = a^n$.
- **Examples** $2^{-3} = \frac{1}{2^3}$ and $\frac{1}{b^{-8}} = b^8$

Key Concept

Product of Powers

- **Words** For any real number a and integers m and n , $a^m \cdot a^n = a^{m+n}$.
- **Examples** $4^2 \cdot 4^9 = 4^{11}$ and $b^3 \cdot b^5 = b^8$

Key Concept

Quotient of Powers

- **Words** For any real number $a \neq 0$, and integers m and n , $\frac{a^m}{a^n} = a^{m-n}$.
- **Examples** $\frac{5^3}{5} = 5^{3-1}$ or 5^2 and $\frac{x^7}{x^3} = x^{7-3}$ or x^4

Key Concept

Properties of Powers

- **Words** Suppose a and b are real numbers and m and n are integers. Then the following properties hold.

Power of a Power: $(a^m)^n = a^{mn}$

Power of a Product: $(ab)^m = a^m b^m$

Power of a Quotient: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$, $b \neq 0$ and

$$\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n \text{ or } \frac{b^n}{a^n}, a \neq 0, b \neq 0$$

- **Examples**

$$(a^2)^3 = a^6$$

$$(xy)^2 = x^2 y^2$$

$$\left(\frac{a}{b}\right)^3 = \frac{a^3}{b^3}$$

$$\left(\frac{x}{y}\right)^{-4} = \frac{y^4}{x^4}$$

exs.

1) $x^2 \cdot x^8$

2) $(2b)^4$

3) $(n^3)^3(n^{-3})^3$

4) $\frac{-2a^3b^6}{18a^2b^2}$

5) $\left(\frac{cd}{3}\right)^{-2}$

6) $\left(\frac{-6x^6}{3x^3}\right)^{-2}$

Polynomials: to add or subtract polynomials combine like terms

1) Simplify $(3x^2 - 2x + 3) - (x^2 + 4x - 2)$.

2) $(3x^2 - x + 2) + (x^2 + 4x - 9)$

When you multiply polynomials you use the Distribute Property.

1) $2x(7x^2 - 3x + 5)$

2) $(3y + 2)(5y + 4)$

3) $(n + 4)(n^2 + 6n - 2)$

When dividing a polynomial by a monomial.....

$$\frac{4x^3y^2 + 8xy^2 - 12x^2y^3}{4xy}$$

ex. $\frac{5ab^2 - 4ab + 7a^2b}{ab}$