

- List all the factors of 98.
- Which one of the following numbers is a prime?

39, 49, 59, 69, 99

- Perform the following division. Show both the quotient and the remainder.
For example, $19 \div 7 = 2 \text{ R } 5$.

$$2009 \div 11 =$$

- Perform the following operations. Show all steps.

- a) $-2 - 7$ i) $|12 - 2 - 3|$ q) $\sqrt{169 - 144}$
 b) $-2(-7)$ j) $-5(4 - 3(-2))$ r) $\sqrt{169} - \sqrt{144}$
 c) -5^2 k) $2((5^2 - (-4)^2) - 10)^2 - 11$ s) $\left(7 + \frac{2 \cdot 5 - 4}{1^2 - (-2)^2}\right) 4 - 3$
 d) $(-5)^2$ l) $-2 + (-2)^2 + (-2)^3$ t) $\frac{3 - (-7)}{-7 - 3} =$
 e) -5^{-2} m) $|2 + (-7)|$ u) $2^{-1} - 2^{-2}$
 f) $(-5)^{-2}$ n) $|2| + |-7|$ v) _____
 g) $|12 - 2|-3|$ o) $\frac{3(-4^2 - 2 \cdot 7)}{2^3 - (-1)^3} + 4 - 2(3^3 - (-5)^2)$
 h) $|12 - |2 - 3||$ p) $((1 - 2)^2 - 3)^2 - 4$

- Simplify each of the following.

- a) $x^2 \cdot x^3$ f) $(3p - 2)^2$ k) $(3\sqrt{5} - 2)(2\sqrt{5} + 1)$
 b) $(x^2)^3$ g) $(3p - 2)(3p + 2)$ l) $(2\sqrt{3} - 1)^2$
 c) $\frac{(2ab^2)^3}{(2a^3b)^2}$ h) $2x - 5 - (x - 1)^2$ m) $\sqrt{48} - 2\sqrt{75} + 3\sqrt{12}$
 d) $(-2a^4b^5)^3(3a^{-2}b)^2$ i) $\frac{x^2 - 18x + 80}{x^2 - 6x - 16}$ n) $(3\sqrt{5} + 8)(3\sqrt{5} - 8)$
 e) $3(2a - 1) - 4(a - 3)$ j) $\frac{x^2 - 4}{3x + 6} \div \frac{10x + x^2 - 24}{x + 12}$

- Find the exact value of $x^2 - 6x + 11$ if

a) $x = \sqrt{2} - 1$ b) $x = \sqrt{10} + 3$ c) $x = 2\sqrt{5} - 3$

- Completely factor each of the following.

- a) $a^{10} - 1$ e) $50p^6 - 2q^4$
 b) $2x^3 - 24x^2 - 216x$ f) $s^4 - 16$
 c) $-75x + 3x^3$ g) $1350x^4 + 4x^5 - 2x^6$
 d) $2625ab - 100abx - 5abx^2$

8. Solve each of the following equations. Make sure to check your solution(s).

a) $2x^3 = 18x$ b) $2x^3 = 18x^2$ c) $36x^2 + 3x^3 = 135x$ d) $3x(x + 8)(2x - 5) = 0$

9. We throw an object upward from the top of a 1232 ft tall building. Let t represent the time, (measured in seconds) that passed since we threw the object, and let h_t represent the distance of the object from the ground at time t . Then

$$h_t = -16t^2 + 64t + 1232$$

a) Find h_0 . b) Find h_2 . c) Find h_7 .

d) How long will it take for the object to hit the ground? (Hint: you need to find t so that $h_t = 0$)