Solve by factoring.

a. $m^2 - 3m = 0$

b. $w^2 - 2w = 0$

c. $g^2 - 4g = 0$

d. $3h^2 - 6h = 0$

e. $2f^2 - 6f = 0$

f. $9k^2 - 3k = 0$

g. $3d^2 - d = 0$

h. $2t^2 - 2t = 0$

i. $4p^2 - 6p = 0$

j. $5b^2 - 10b = 0$

KEYS

a. $m^2 - 3m = 0$

Step 1. Factor.
$m(m - 3) = 0$ Factor out the greatest common factor, m.

Step 2. Use the zero product property to solve.
According to the zero product property, if $m(m - 3) = 0$, then m must be 0 or m – 3 must be 0. Write the two equations and solve for m.

$$m = 0 \quad \text{or} \quad m - 3 = 0$$
$$m = 3$$

The solutions are m = 0 and m = 3.

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b. $w^2 - 2w = 0$

Step 1. Factor.
$w(w - 2) = 0$ Factor out the greatest common factor, w.

Step 2. Use the zero product property to solve.
According to the zero product property, if $w(w - 2) = 0$, then w must be 0 or w – 2 must be 0. Write the two equations and solve for w.

$$w = 0 \quad \text{or} \quad w - 2 = 0$$
$$w = 2$$

The solutions are w = 0 and w = 2.

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c. $g^2 - 4g = 0$

Step 1. Factor.
$g(g - 4) = 0$ Factor out the greatest common factor, g.

Step 2. Use the zero product property to solve.
According to the zero product property, if $g(g - 4) = 0$, then g must be 0 or g – 4 must be 0. Write the two equations and solve for g.

$$g = 0 \quad \text{or} \quad g - 4 = 0$$
$$g = 4$$

The solutions are g = 0 and g = 4.

d. $3h^2 - 6h = 0$

Step 1. Factor.
$3h(h - 2) = 0$ Factor out the greatest common factor, 3h.

Step 2. Use the zero product property to solve.
According to the zero product property, if $3h(h - 2) = 0$, then 3h must be 0 or $h - 2$ must be 0. Write the two equations and solve for h.

$$3h = 0 \quad \text{or} \quad h - 2 = 0$$
$$h = 0 \qquad\qquad h = 2$$

The solutions are h = 0 and h = 2.

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e. $2f^2 - 6f = 0$

Step 1. Factor.
$2f(f - 3) = 0$ Factor out the greatest common factor, 2f.

Step 2. Use the zero product property to solve.
According to the zero product property, if $2f(f - 3) = 0$, then 2f must be 0 or $f - 3$ must be 0. Write the two equations and solve for f.

$$2f = 0 \quad \text{or} \quad f - 3 = 0$$
$$f = 0 \qquad\qquad f = 3$$

The solutions are f = 0 and f = 3.

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f. $9k^2 - 3k = 0$

Step 1. Factor.
$3k(3k - 1) = 0$ Factor out the greatest common factor, 3k.

Step 2. Use the zero product property to solve.
According to the zero product property, if $3k(3k - 1) = 0$, then 3k must be 0 or $3k - 1$ must be 0. Write the two equations and solve for k.

$$3k = 0 \quad \text{or} \quad 3k - 1 = 0$$
$$k = 0 \qquad\qquad 3k = 1$$
$$\qquad\qquad\qquad k = 1/3$$

The solutions are k = 0 and k = 1/3.

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g. $3d^2 - d = 0$

Step 1. Factor.
d(3d − 1) = 0 Factor out the greatest common factor, d.

Step 2. Use the zero product property to solve.
According to the zero product property, if d(3d − 1) = 0, then d must be 0 or 3d − 1 must be 0. Write the two equations and solve for d.

$$d = 0 \qquad \text{or} \qquad 3d - 1 = 0$$
$$d = 0 \qquad\qquad\qquad 3d = 1$$
$$d = 1/3$$

The solutions are d = 0 and d = 1/3.

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h. $2t^2 - 2t = 0$

Step 1. Factor.
2t(t − 1) = 0 Factor out the greatest common factor, t.

Step 2. Use the zero product property to solve.
According to the zero product property, if 2t(t − 1) = 0, then 2t must be 0 or t − 1 must be 0. Write the two equations and solve for t.

$$2t = 0 \qquad \text{or} \qquad t - 1 = 0$$
$$t = 0 \qquad\qquad\qquad t = 1$$

The solutions are t = 0 and t = 1.

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i. $4p^2 - 6p = 0$

Step 1. Factor.
2p(2p − 3) = 0 Factor out the greatest common factor, 2p.

Step 2. Use the zero product property to solve.
According to the zero product property, if 2p(2p − 3) = 0, then 2p must be 0 or 2p–3 must be 0. Write the two equations and solve for p.

$$2p = 0 \qquad \text{Or} \qquad 2p - 3 = 0$$
$$p = 0 \qquad\qquad\qquad 2p = 3$$
$$p = 3/2$$

The solutions are p = 0 and p = 3/2.

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j. $5b^2 – 10b = 0$

Step 1. Factor.
5b(b – 2) = 0 Factor out the greatest common factor, 5b.

Step 2. Use the zero product property to solve.
According to the zero product property, if 5b(b – 2) = 0, then 5b must be 0 or b – 2 must be 0. Write the two equations and solve for b.

$$5b = 0 \quad \text{Or} \quad b – 2 = 0$$
$$b = 0 \qquad\qquad b = 2$$

The solutions are b = 0 and b = 2.