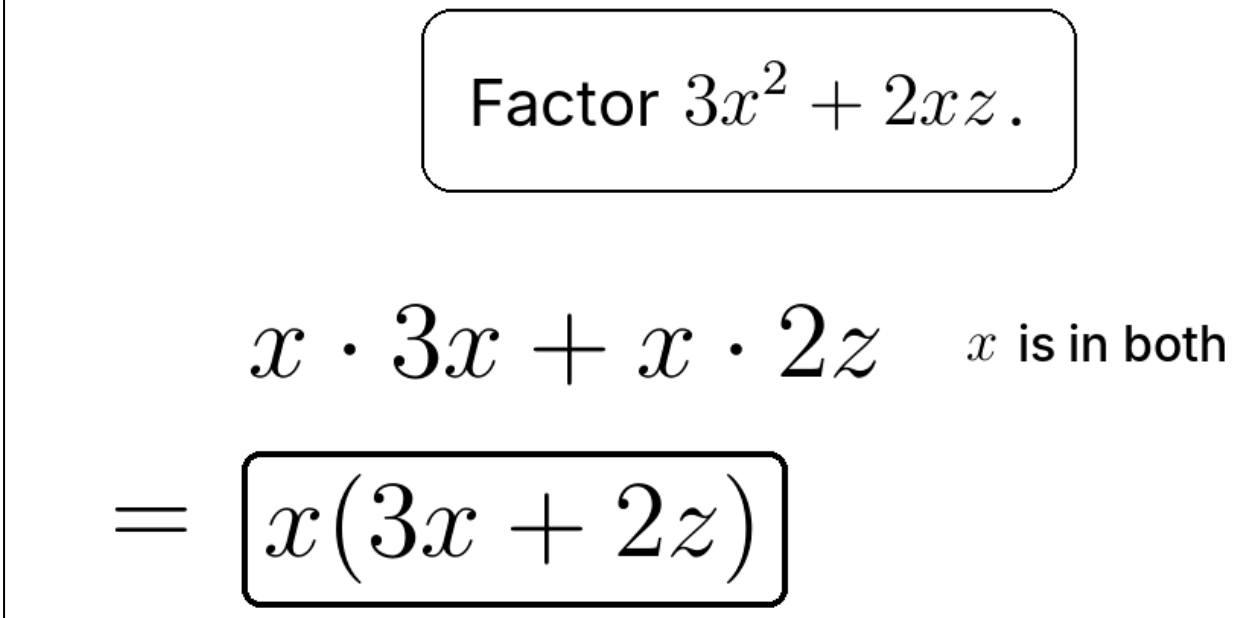
What Every Term Shares

MV07-V1 · storyboard · MV07 Factor out a common factor with several letters. Read each picture with its sentences.

Picture 1



1. Factor 3x² + 2xz.
2. Both terms have an x; z is only in the second one.
3. Take out the x: x(3x + 2z).

Picture 2

Trap $3x^2 + 2xz$

✗ $xz(3x + 2)$

✓ $x(3x + 2z)$

4. Watch for the trap: taking out a letter that isn't in every term.
5. z is missing from the first term, so only x comes out.

Picture 3

Factor $7r^2s^2 - 21rs^3 + 14rs^4$.

The greatest common factor

$$7rs^2$$

$$\boxed{7rs^2(r - 3s + 2s^2)}$$ each term $\div 7rs^2$

Check: $r = 1,\ s = 2$: $28 - 168 + 224 = 84 = 28 \cdot 3$ ✓

6. Now factor $7r^2s^2 - 21rs^3 + 14rs^4$.
7. The numbers share seven.
8. Every term has at least one r, and at least two s's.
9. So the greatest common factor is $7rs^2$.
10. Divide each term by $7rs^2$: r, then $-3s$, then $2s^2$.
11. Check with r = 1 and s = 2: both come to 84.

Picture 4

Trap $7r^2s^2 - 21rs^3 + 14rs^4$

× $7(r^2s^2 - 3rs^3 + 2rs^4)$ equal, but not finished

✓ $7rs^2(r - 3s + 2s^2)$

12. Watch for the trap: stopping at seven.
13. The bracket still shares rs^2.
14. Take out $7rs^2$.