**3.4 - Solve Quadratic Equations by Factoring ⸱ Form A**

**All work must be completed, clearly, on a separate page. Circle/Box final answers only on WS. No work = No credit.**

**Examples 1 and 2**

**Solve each equation by factoring. Check your solution.**

**1.** *x*2 = 7*x* **2.** *x*2 + *x* – 30 = 0 **3.** *x*2 – 3*x* = 10

**Example 3**

 **4. PHOTOGRAPHY** The length and width of a 6-inch by 8-inch photograph are reduced by the same amount to make a new photograph with area that is half that of the original. By how many inches will the dimensions of the photograph have to be reduced?

**Example 4**

**Solve each equation by factoring. Check your solution.**

 **5.** 6*x*2 – 5*x* – 4 = 0 **6.** 12*x*2 – 8*x* + 1 = 0 **7.** 3*x*2 + 2*x* = 21

**Example 5–7**

**Solve each equation by factoring. Check your solution.**

 **8.** *x*2 – 100 = 0  **9.** *x*2 + 14 = 50  **10.** 124 = *x*2 + 3

 **11.** 9*x*2 + 6*x* = ‒1 **12.** 81*x*2 + 36*x* = ‒4 **13.** 9*x*2 + 60*x* + 95= ‒5

 **14.** *x*2 + 100 = 0  **15.** *x*2 + 4 = 0 **16.** 64*x*2 = –49

**Mixed Exercises**

**STRUCTURE Solve each equation by factoring. Check your solution.**

**17.** 27*x*2 + 5 = 48*x* **18.** 45*x*2 ‒ 3*x* = 2*x* **19.** 16*x*2 + 8*x* = ‒1

**20. ANIMATION** A computer graphics animator would like to make a realistic simulation of a tossed ball. The animator wants the ball to follow the parabolic trajectory represented by

*f*(*x*) = –0.2(*x* + 5)(*x* – 5).

 **a.** What are the solutions of *f*(*x*) = 0?

 **b.** If the animator changes the equation to *f*(*x*) = –0.2*x*2 + 20, what are the solutions of *f*(*x*) = 0?

 **21.** Find two consecutive odd positive integers whose product is 323.

 **22. FIND THE ERROR** Jade and Mateo are solving ‒12*x*2 + 5*x* + 2 = 0. Is either of them correct? Explain your reasoning.

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**23. PERSEVERE** The rule for factoring a difference of cubes is shown below. Use this rule to factor

40*x*5 ‒ 135*x*2*y*3.

*a*3 ‒ *b*3 = (*a* ‒ *b*)(*a*2 + *ab* + *b*2)

**24. CREATE** Choose two integers. Then write an equation in standard form with those roots. How would the equation change if the signs of the two roots were switched?

**25. ANALYZE** Determine whether the following statement is *sometimes*, *always*, or *never* true. Explain your reasoning.

*In a quadratic equation in standard form where a*, *b*, *and c are integers,*

*If b is odd, then the quadratic cannot be a perfect square trinomial.*

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**26. WRITE** Explain how to factor a trinomial in standard form with *a* > 1.

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