Name

Class



Date

**Simplifying Radicals**

You can remove perfect-square factors from a radicand.



**Problem**

What is the simplified form of ?

In the radicand, factor the coefficient and the variable separately into perfect square factors, and then simplify. Factor 80 and *n*5 completely and then find paired factors.

|  |  |
| --- | --- |
| **Solve** 80 = 8 · 10 = 2 · 2 · 2 · 2 · 5 | Factor 80 completely. |
| = (2 · 2)(2 · 2) · 5 = (2 · 2)2 · 5 | Find pairs of factors.Use the rule  |
|  | The square root of a number squaredis the number:  |
| *n*5 = *n* · *n* · *n* · *n* · *n* | Factor *n*5 completely. |
| = (*n* · *n*)· (*n* · *n*)· *n =* (*n* · *n*)2· *n* | Find pairs of factors. |
|  | Separate the factors. |
|  | Remove the perfect square. |
|  | Combine your answers. |
| **Check**    | Check your solution. |
|    | Divide both sides by . |
|  = 4*n*2 | Simplify. |
| 4*n*2 = 4*n*2  |  |
| Solution: The simplified form of  is 4*n*2. |  |

**Exercises**

**Simplify each radical expression.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1.** |  | **2.** |  | **3.** |  |
| **4.** |  | **5.** |  | **6.** |  |
| **7.** |  | **8.** |  | **9.** |  |

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**Simplifying Radicals**



**Problem**

What is the simplified form of ?

Begin by cancelling the common factors in the numerator and denominator. Simplify the numerator and denominator separately when the denominator is a perfect square. Remember that the radical is not simplified if there is a radical in the denominator. Multiply to remove the radical from the denominator.

|  |  |  |
| --- | --- | --- |
| **Solve** |  | Factor the numerator and denominator completely. |
|  | =  | Cancel the common factors. |
|  | =  | Find pairs of factors. These are the perfect-square factors. |
|  | =  | Simplify the numerator and denominator separately to remove the perfect-square factors.  and  |
|  | =  | Multiply the numerator and denominator by  to remove  from the denominator. |
|  | =  | Remove the perfect-square factor from the denominator. |

Solution: The simplified form of 

**Exercises**

**Simplify each radical expression.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **10.** |  | **11.** |  | **12.** |  |
| **13.** |  | **14.** |  | **15.** |  |
| **16.** |  | **17.** |  | **18.** |  |