```
divides_iff_div_exact  THM

⊢  ∀a:ℤ, n:ℤ⁻⁰. n | a ⟺ (a ÷ n)·n = a  by GenUnivCD
|
|\
| 1. a : ℤ
| 2. n : ℤ⁻⁰
| 3. n | a
| ⊢  (a ÷ n)·n = a
| | by FwdThru
| |    Thm* ∀a:ℤ, b:ℤ⁻⁰. b | a ⟺ (a rem b) = 0
| |    {divides_iff_rem_zero}
| |    [3]
| |
| 4. (a rem n) = 0
| ⊢  (a ÷ n)·n = a
| | by Using [`n`,((a ÷ n)·n)]
| |    (FwdThru Thm* ∀a,b,n:ℤ. a = b ⟺ a+n = b+n    {add_mono_wrt_eq}
| |     [4])
| |
| 5. (a rem n)+(a ÷ n)·n = 0+(a ÷ n)·n
| ⊢  (a ÷ n)·n = a  by Assert ((a ÷ n)·n+(a rem n) = (a ÷ n)·n)
| |
| 6. (a ÷ n)·n+(a rem n) = (a ÷ n)·n
| ⊢  (a ÷ n)·n = a
|   by RWH
|      (RevLemmaC
|       Thm* ∀a:ℤ, n:ℤ⁻⁰. a = (a ÷ n)·n+(a rem n)    {div_rem_sum})
|      6
|
.\
. 1. a : ℤ
. 2. n : ℤ⁻⁰
. 3. (a ÷ n)·n = a
. ⊢  n | a  by Unfold `divides` 0
. |
. ⊢  ∃c:ℤ. a = n·c  by Witness a ÷ n
END
```