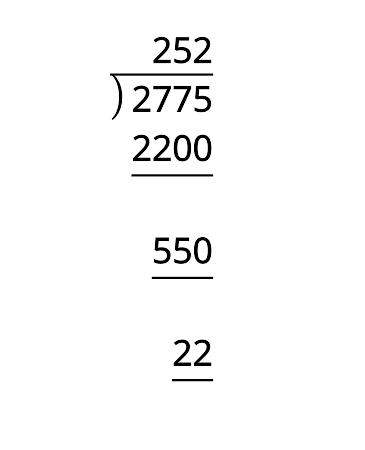
## Unit 2 Lesson 19: End Behavior of Rational Functions

### 1 Different Divisions, Revisited (Warm up)

#### Student Task Statement

Complete all three representations of the polynomial division following the forms of the integer division.



### 2 Combined Fuel Economy

#### Student Task Statement

In 2000, the Environmental Protection Agency (EPA) reported a combined fuel efficiency for cars that assumes 55% city driving and 45% highway driving. The expression for the combined fuel efficiency of a car that gets mpg in the city and mpg on the highway can be written as .

1. Several conventional cars have a fuel economy for highway driving is that is about 10 mpg higher than for city driving. That is, . Write a function that represents the combined fuel efficiency for cars like these in terms of .
2. Rewrite in the form where , , and are polynomials.

### 3 Exploring End Behavior

#### Student Task Statement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| function | degree of num. | degree of den. | rewritten in the form of | end behavior |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. Complete the table to explore the end behavior for rational functions.
2. What do you notice about the end behavior of different types of rational functions?



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