

## 8.EE Coupon versus discount

### Task

You have a coupon worth \$18 off the purchase of a scientific calculator. At the same time the calculator is offered with a discount of 15%, but no further discounts may be applied. For what tag price on the calculator do you pay the same amount for each discount?

### IM Commentary

This task involves solving equations with rational coefficients, and requires students to use the distributive law ("combine like terms"). The equation also provides opportunities for students to observe structure in the equation to find a quicker solution, as in the second solution presented.

### Solutions

#### **Solution: Coupon versus discount**

If  $p$  is the tag price in dollars then  $p - 18$  is the price using the coupon while  $0.85p$  is the price using the 15% discount. Then when the discounts are the same,

$$\begin{aligned}p - 18 &= 0.85p \\p - 0.85p &= 18 \\0.15p &= 18 \\p &= 120.\end{aligned}$$

Thus, the tag price is \$120.

**Solution: Coupon versus discount: solution by comparing the price reduction**

The cost is the same when the reduction in price is the same. The coupon always gives a \$18 reduction in price; if  $p$  is the tag price in dollars then the discount gives a reduction in price of  $\$0.15p$ . So the cost is the same when

$$18 = 0.15p$$
$$p = 120.$$

Thus, the tag price is \$120.



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