Math in Focus: Singapore Math National Institute
July 16-17 2013 | Philadelphia PA

ADVANCED BAR MODELING

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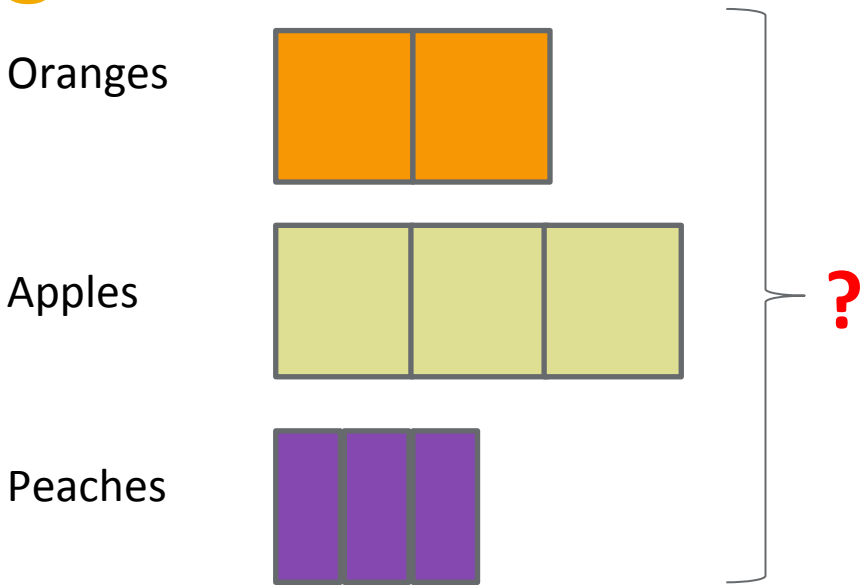
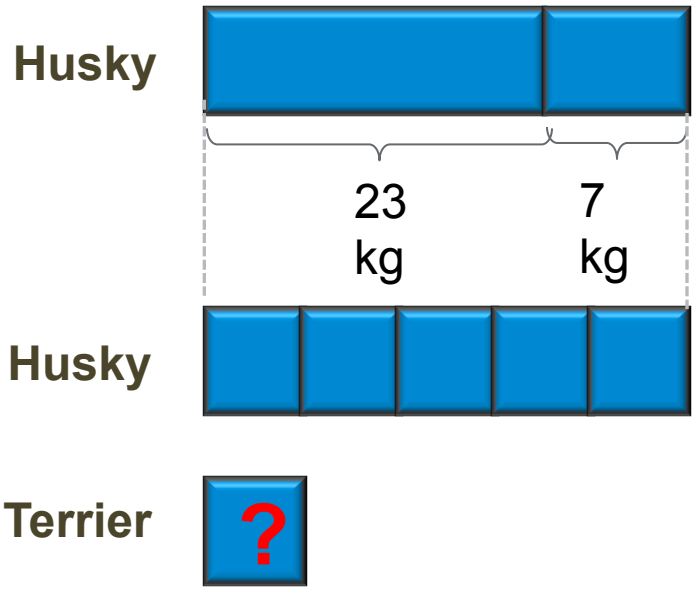
Houghton Mifflin Harcourt

Advanced Bar Models



A family has two dogs, a husky and a terrier. The husky's mass is 23 kilograms. If he gains 7 kilograms, his mass will be five times that of the terrier. What is the mass of the terrier?



23 + 7 = 30

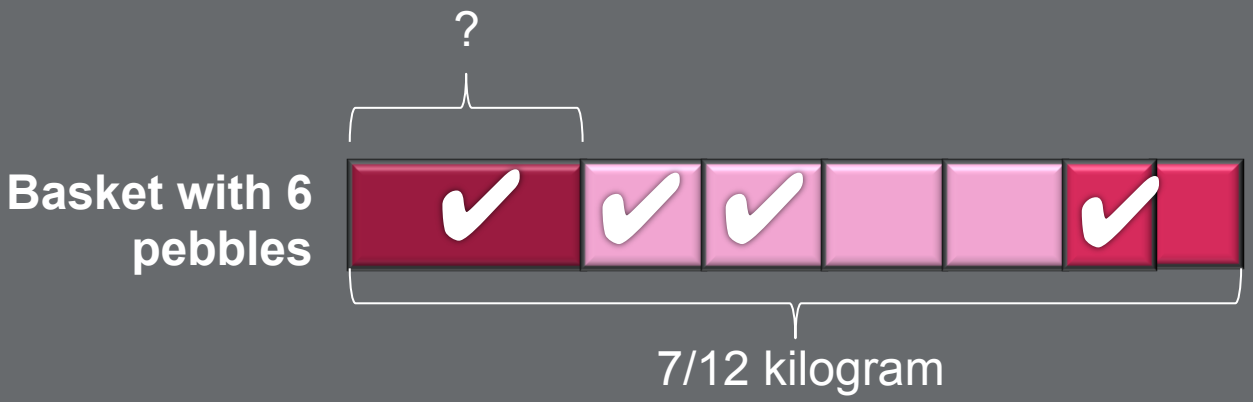
5 units → 30 kilograms

30 ÷ 5 = 6

1 unit → 6 kilograms

The mass of the terrier is 6 kilograms

The total mass of a basket, 4 large pebbles, and 2 small pebbles is 7/12 kilogram. The total mass of the basket, 2 large pebbles and 1 small pebble is 5/12 kilogram. Find the mass of the empty basket.



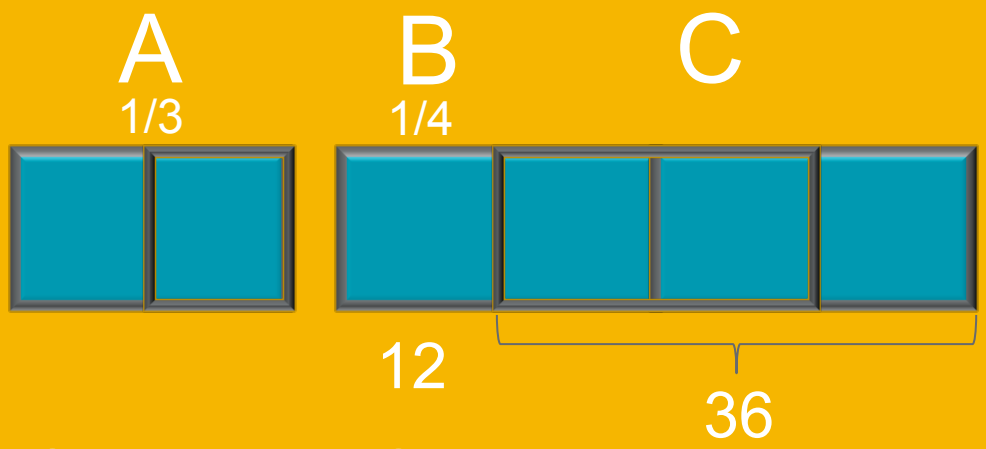
7/12 – 5/12 = 2/12

5/12 – 2/12 = 3/12

The mass of the empty basket is ¼ kilograms.

2/12 =  & 3/12 or 1/4 = 

Roy took a test with 3 sections A,B, and C. Roy spent 1/3 of his time on Section A and 1/4 of the remaining time on Section B. He spent 36 minutes on section C. How much time did Roy take to complete the whole test?



36 = 3/4, so 36 ÷ 3 = 12

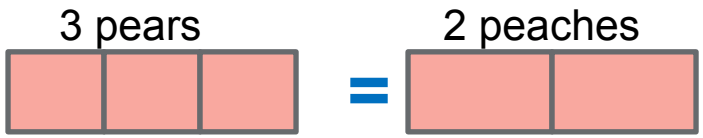
1/3 = 2/6 = 24, 6/6 = 72

He spent 72 minutes on the test.

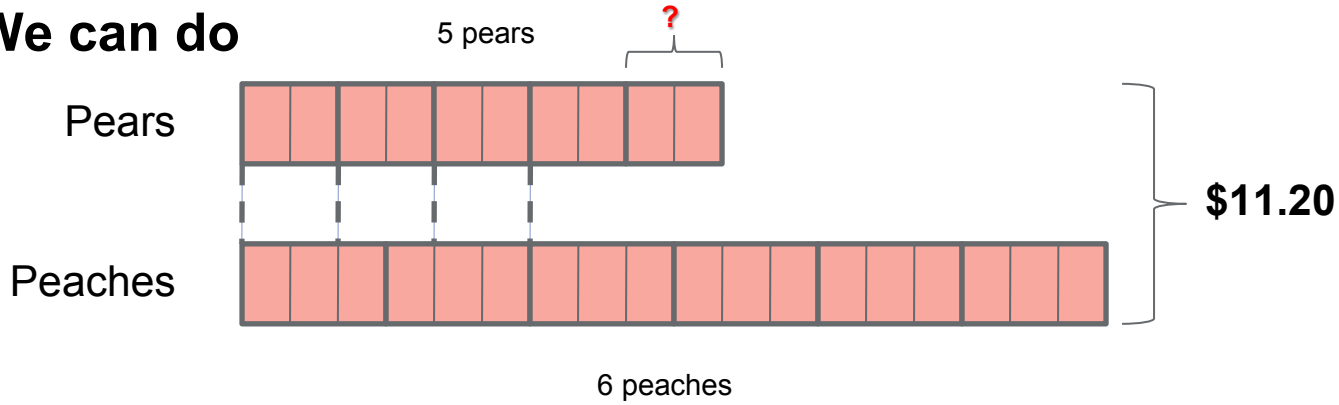
Jordan paid $11.20 for 5 pears and 6 peaches.
The cost of 3 pears is as much as 2 peaches.
Find the cost of a pear.

Solution: **What do we know? What can we do?**

We know that



We can do



28 units = 11.20

11.20 ÷ 28 = 0.40

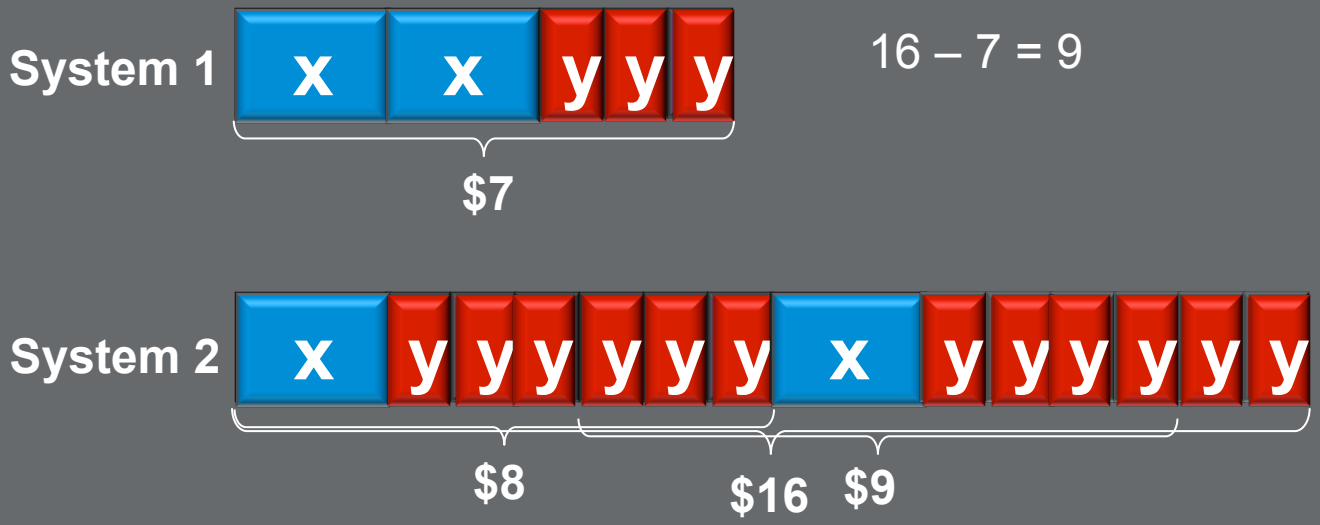
1 unit = 0.40

2 units = $0.80
(a pear)

The cost of a pear is $0.80.

Two notepads and three pens cost $7. One notepad and 6 pens cost $8. What is the cost of one notepad and one pen?

7th Grade Advanced

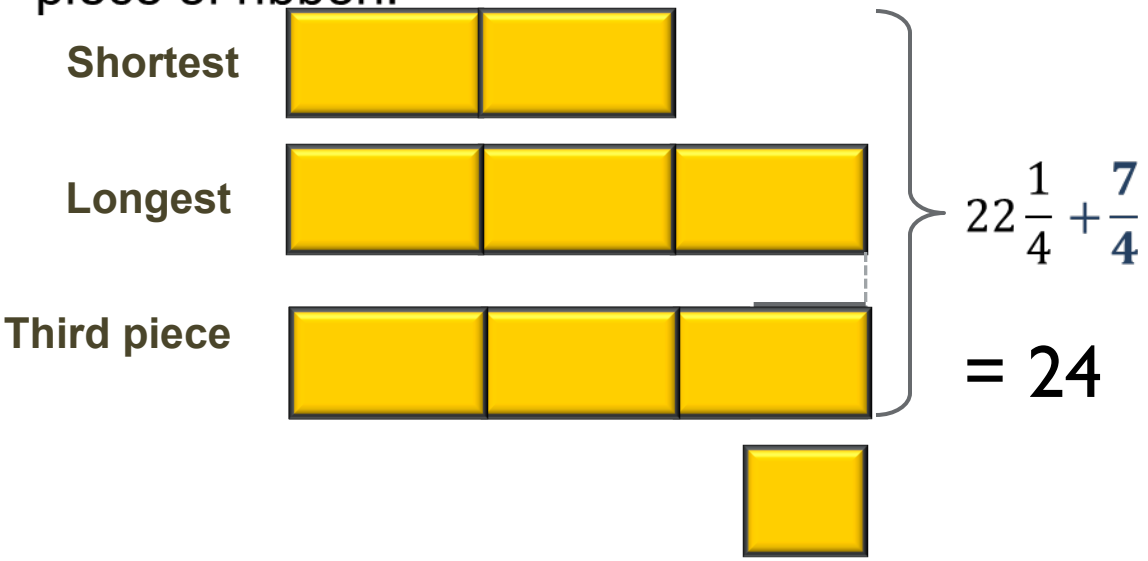


9 units = 9
1 unit = 1

y = pen = $1
x = notebook = $2

One notebook is $2 and the cost of one pen is $1.

Margaret buys a roll of ribbon from a shop. She cuts the ribbon into three pieces. The ratio of the length of the shortest piece to the length of the longest is 2 : 3. The third piece is $1\frac{3}{4}$ feet shorter than the longest piece. If the total length of the ribbon is $22\frac{1}{4}$ feet long, then find the length of each piece of ribbon.



$22\frac{1}{4} + \frac{7}{4}$

$= 24$

8 units = 24 feet
1 unit = 3 feet

Shortest 2 units × 3 feet = **6 feet**
Longest 3 units × 3 feet = **9 feet**
Third piece 9 feet - $^{7}/_{4} = 7\,^{1}/_{4}$ **feet**

$$2x + 3x + (3x - 1\frac{3}{4}) = 22\frac{1}{4}$$

$$8x - 1\frac{3}{4} = 22\frac{1}{4}$$

$$8x - 1\frac{3}{4} + 1\frac{3}{4} = 22\frac{1}{4} + 1\frac{3}{4}$$

$$8x = 24$$

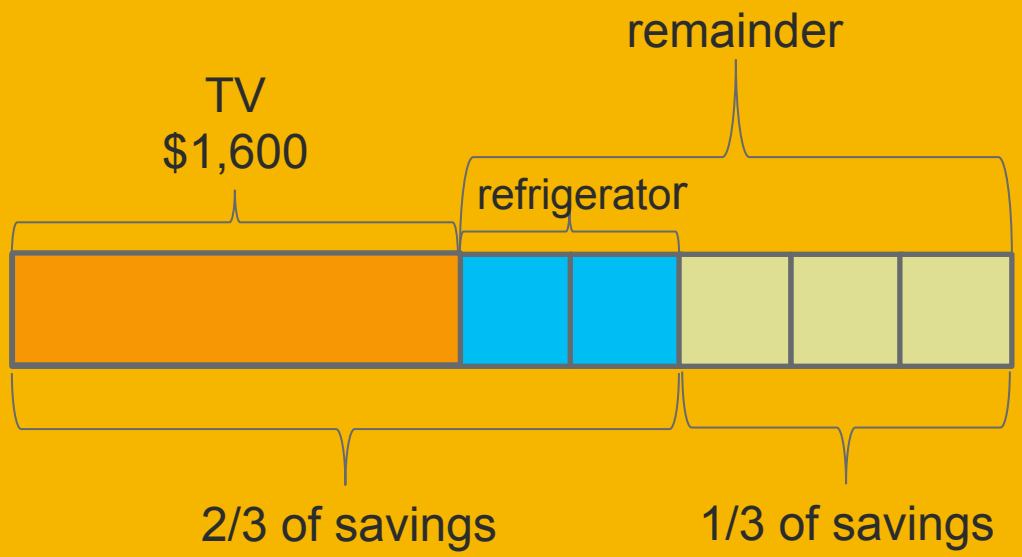
$$\frac{8x}{8} = \frac{24}{8}$$

$$x = 3$$

Mr. Thomas spent $1,600 of his savings on a television set and 2/5 of the remainder on a refrigerator. He had 1/3 of his original amount of savings left.

A) What was Mr. Thomas's original savings?

B) What was the cost of the refrigerator?



4 units → $1,600

1 unit → = $400

9 x $400 = $3,600

2 x $400 = $800

The original savings were $3,600 and the refrigerator cost $800.

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