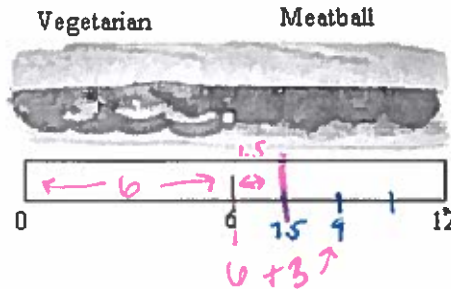


Key

Jared and Karla jointly bought the half meatball-half vegetarian 12 in sub for \$15.00. They plan to divide the sandwich fairly using the divider-chooser method. Jared likes meatball subs two times as much as vegetarian subs; Karla likes vegetarian subs four times as much as meatball subs. Assume that Jared and Karla do not know each other's likes and dislikes. Assume also that the sandwich is cut along its width.



- Determine how Jared should cut the sandwich into two shares s_1 and s_2 . (Describe different shares of the sandwich using the ruler and interval notation. For example, $[0, 6]$ describes the vegetarian half.)

$$\text{Jared: } 2x + x = 15$$

$$x = \$5.00$$

Veg: 6 shares

Meat: 12 shares (6×2)

18 shares $\rightarrow \frac{18}{2} = 9$

$$6 + 3 = 6 + (1.5) \cdot 2 = 9$$

Cut:

$$s_1 = [0, 7.5]$$

$$s_2 = [7.5, 12]$$

- After Jared cuts, Karla gets to choose. Specify which share s_1 or s_2 Karla should choose. What is the value of this share to Karla?

s_1

Veg: $6 \times 4 = 24$ shares

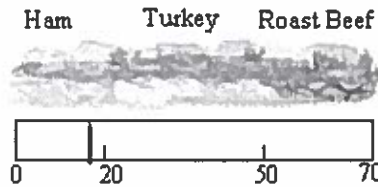
Meat: 6 shares

30

$$[0, 7.5] \rightarrow \frac{24 + 1.5}{30} = \frac{25.5}{30} = .85$$

$$.85(15) = \$12.75$$

Martha and Nick jointly bought the 70 inch sub for \$99. They plan to divide the sandwich fairly using the divider-chooser method. Martha likes ham sandwiches three times as much as she likes turkey subs, and she likes turkey and roast beef subs the same. Nick likes roast beef subs two times as much as he likes ham subs, and he likes ham and turkey subs the same. Assume that Nick and Martha just met and know nothing of each other's likes and dislikes. Assume also that the sandwich is cut along its width.



3. Describe how Martha would cut the sandwich into two shares s_1 and s_2 . Round to the nearest whole inch.

$$H: 3 \left(\frac{20}{70} \right)$$

$$T: \frac{30}{70}$$

$$RB: \frac{20}{70}$$

$$\text{Total: } \frac{110}{70} \div 2 = \frac{55}{70}$$

$$\frac{55}{60} \cdot 20 = 18.\bar{3}$$

$$s_1: [0, 18]$$

$$s_2: [18, 70]$$

4. After Martha cuts, Nick gets to choose. Specify which share s_1 or s_2 should Nick choose. Give the value of the share that Nick chooses.

$$H: \frac{20}{70}$$

$$T: \frac{30}{70}$$

$$RB: \frac{40}{70}$$

$$s_2: [18, 70]$$

$$[18, 20] = 2$$

$$[20, 70] = \frac{30 + 40}{70}$$

$$\frac{72}{90} \cdot \$99 = \$79.20$$