

Name (print):

Solutions.

Each problem is worth 2 points. Show all your work.

1. Calculate mentally using the arithmetic properties (remember to show your thinking).

(a) $\left(\frac{4}{7} + \frac{7}{9}\right) - \frac{3}{7}$

$$= \frac{1}{7} + \frac{7}{9} = \frac{9}{63} + \frac{49}{63} = \frac{58}{63}$$

(b) $1234 \cdot \frac{331}{783} + 1234 \cdot \frac{452}{783}$

$$= 1234 \cdot \left(\frac{331}{783} + \frac{452}{783}\right) = 1234 \cdot \frac{783}{783} = 1234$$

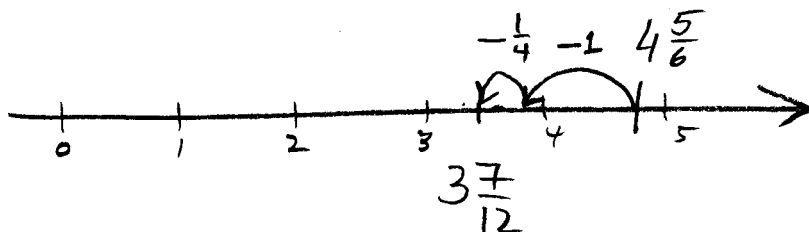
2. Find the answers to addition/subtraction questions and illustrate using a measurement model based on the number line:

(a) $4\frac{5}{6} - 1\frac{1}{4}$

(b) $1\frac{1}{4} + 2\frac{5}{6}$

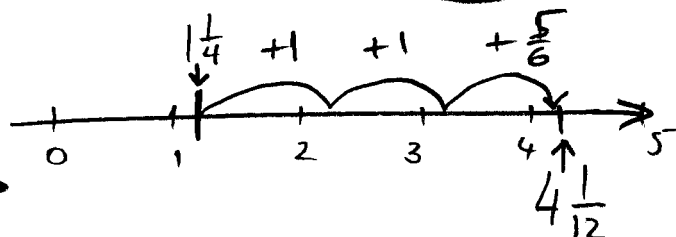
$$\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12}$$

$$4\frac{5}{6} - 1\frac{1}{4} = (4-1) + \left(\frac{5}{6} - \frac{1}{4}\right) = 3\frac{7}{12}$$



$$\frac{1}{4} + \frac{5}{6} = \frac{10}{12} + \frac{3}{12} = \frac{13}{12}$$

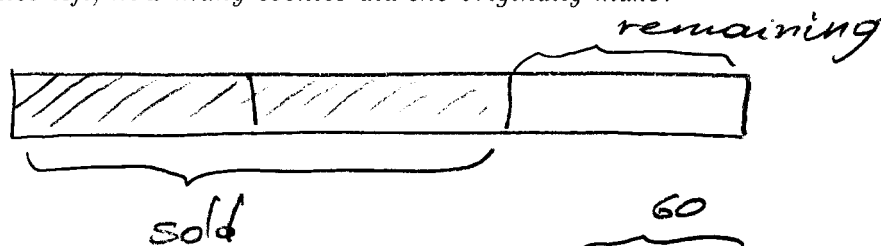
$$1\frac{1}{4} + 2\frac{5}{6} = 4\frac{13}{12} = 5\frac{1}{12}$$



Please turn over...

3. Give a teacher's solution using either bar diagrams or algebra: Whitney made a large batch of cookies. She sold $\frac{2}{3}$ of them and gave $\frac{1}{5}$ of the remainder to her friends. If she had 60 cookies left, how many cookies did she originally make?

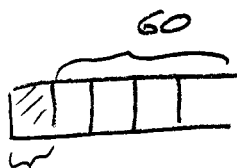
Bar diagram:



$$\text{remaining} = 60 \div \frac{4}{5}$$

$$= 60 \cdot \frac{5}{4}$$

$$= 75$$



gave to friends

$$\begin{aligned} \text{All cookies} &= \text{remaining} \div \frac{1}{3} = 75 \div \frac{1}{3} \\ &= 75 \times 3 \\ &= \boxed{225} \end{aligned}$$

Answer: 225 cookies.

Algebra:

x = total of cookies.

$\frac{2}{3}x$ sold

$\frac{1}{3}x$ remaining

$\frac{1}{5} \cdot \frac{1}{3}x$ gave to friends

$$60 = \frac{4}{5} \cdot \frac{1}{3}x \text{ remaining}$$

$$60 = \frac{4}{15}x$$

$$x = \frac{60 \cdot 15}{4} = 15 \cdot 15 = 225$$

Answer: 225 cookies.