NC Objective: Use Common Factors to Simplify Fractions

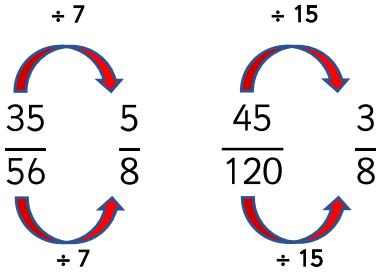
Task 1: Answer: She needed to simplify the third fraction further.

Task 2: Answer: 7 and 12 are two relatively prime numbers and don't have common factors (except 1). Also, you don't have a decimal number in a fraction.

Task 3: Answer: $\frac{7}{63} = \frac{1}{9}$

Task 4: Answer: No, she isn't. 36 ÷ 3 = 12, so she should find 8 x 12 = 96.
The correct answer is $\frac{36}{96}$.

Task 5: Answer: Leanna has $\frac{5}{8}$ and Esin has $\frac{3}{8}$, so Leanna has a bigger piece.



NC Objective: Use Common Multiples to Express Fractions in the Same Denomination

Task 1: Answer: Malachi is sometimes correct.
E.g. 1. $\frac{3}{11}$ and $\frac{5}{22}$ (LCM of 11 and 22 is 22, which is not their product).

E.g. 2: $\frac{3}{5}$ and $\frac{1}{6}$ (LCM of 5 and 6 is their product, 5x 6 = 30).

Task 2: Answer: Tia has made a mistake in the first fraction. She should have multiplied the numerator and the denominator by 3: $\frac{3}{8} = \frac{9}{24}$. So, $\frac{5}{12}$ is larger than $\frac{3}{8}$.
Rosie has made a mistake while multiplying both fractions.
$\frac{3}{8} = \frac{9}{24}$ and $\frac{5}{12} = \frac{10}{24}$.

Task 3: Answer: There are multiple possibilities. One such possibility is:

$$\frac{3}{6} = \frac{9}{18} = \frac{15}{30}$$

Task 4: Answer: $\frac{54}{81}$
Note that statement c) is an extra information.

Task 5: Answer: $\frac{2}{3} = \frac{2 \times 17}{3 \times 17} = \frac{34}{51}$ or $\frac{2}{3} = \frac{2 \times 18}{3 \times 18} = \frac{36}{54}$ or $\frac{2}{3} = \frac{2 \times 19}{3 \times 19} = \frac{38}{57}$

NC Objective: Compare and Order Fractions, Including Fractions > 1

Task 1: Answer: Yes, Zach is correct. The sequence is in ascending order. It increases by $\frac{5}{12}$.
$\frac{13}{12}$, $1\frac{1}{2}$, $\frac{23}{12}$, $2\frac{1}{3}$, $2\frac{3}{4}$, $3\frac{1}{6}$, $3\frac{7}{12}$, 4.

Task 2: Answer: The first step is to find the same denominator for the fractions. It is 32 (LCM of 2, 4 and 32 is 32). Then we must express them in the same denominator.

$$\frac{24}{32} < \frac{16 \times p}{32} < \frac{57}{32}$$

16 x p must be between 24 and 57.
p is a prime number and therefore
16 x p can either be 16 x 2 = 32 or
16 x 3 = 48. **p = 2 or 3.**

Task 3: Answer: You do not compare fractions by comparing only their numerators or only their denominators. Rather, the fractions should be expressed on the same denominator. The lowest common multiple of 3 and 18 is 18, so $\frac{5 \times 6}{3 \times 6} = \frac{30}{18} < \frac{33}{18}$

Task 4: Answer: Both of them. $\frac{5}{16} = \frac{15}{48}$
$\frac{1}{4} = \frac{12}{48}$

$\frac{7}{24} = \frac{14}{48}$

Task 5: Answer: The third bag.

$2\frac{1}{6} = \frac{13}{6} = \frac{39}{18}$ $\frac{17}{9} = \frac{34}{18}$

$2\frac{2}{3} = \frac{8}{3} = \frac{48}{18}$

NC Objective: Add and Subtract Fractions with Different Denominators and Mixed Numbers, Using the Concept of Equivalent Fractions

Task 1: Answer: $\frac{33}{4}$
(Hint: Largest whole number smaller than 10 is 9)

Task 2: Answer: He sold $\frac{7}{15}$ so the rest was $\frac{8}{15}$ = 40 kg (1 - $\frac{7}{15}$= $\frac{15}{15}$ - $\frac{7}{15}$ = $\frac{8}{15}$)
Then $\frac{1}{15}$ = 5 kg (40 ÷ 8)
The total quantity of strawberries was 15 x 5 kg = 75 kg.

Task 3: Answer: Width: $7\frac{1}{2} - 1\frac{2}{5} = 6\frac{1}{10}$

P = 2 x ($7\frac{5}{10} + 6\frac{1}{10}$) = 2 x $13\frac{6}{10}$ = 2 x $13\frac{3}{5}$ cm = $27\frac{1}{5}$cm

Task 4: Answer: False.
A – B + C = $18\frac{2}{3} - 6\frac{1}{4} + 2\frac{4}{5}$ = $\frac{56}{3} - \frac{25}{4} + \frac{14}{5} = \frac{56 \times 20 - 25 \times 15 + 14 \times 12}{60} = \frac{913}{60}$ = $15\frac{13}{60}$

Task 5: Answer: Yes.

$$\frac{\boxed{3}}{\boxed{4}} - \frac{\boxed{5}}{\boxed{8}} = \frac{\boxed{1}}{\boxed{8}}$$

NC Objective: Multiply Simple Pairs of Proper Fractions, Writing the Answer in its Simplest Form

Task 1: Answer: If part I is $\frac{2}{5}$ of the whole tape, the rest is $\frac{3}{5}$.
The second part is then $\frac{3}{7}$ x $\frac{3}{5} = \frac{9}{35}$ of the whole tape.
So, the third part is $1 - (\frac{2}{5} + \frac{9}{35}) = \frac{12}{35}$
$\frac{12}{35}$ = 36 cm, so $\frac{1}{35}$ = 3 cm.
The whole tape = 35 x 3 cm = 105 cm.

Task 2: Answer: 17 x 6 = 102

$\frac{102}{1}$ x $\frac{4}{21} = \frac{136}{7} = 19\frac{3}{7}$

Task 3: Answer: The product of the denominators must be a multiple of 8. The only possibility is if they are 4 and 6. So the numerators have to be 3 and 5.

$$\frac{3}{4} \times \frac{5}{6} = \frac{5}{8}$$

Task 4: Answer: Rosie is correct. If a fraction is smaller than 1, then the numerator is smaller than the denominator. The product of two fractions both smaller than 1, will be a fraction with a numerator as a product of two smaller numbers over a denominator as a product of two larger numbers.

Task 5: Answer: True.

$$\frac{2}{10} \times \frac{2}{6} = \frac{4}{60}.$$ Simplified by 2 is $\frac{2}{30}$.

NC Objective: Divide Proper Fractions by Whole Numbers

Task 1: Answer: Tia is incorrect.

E.g. $\frac{9}{13} \div \frac{5}{1} = \frac{9}{13} \times \frac{1}{5} = \frac{9}{65}$

Task 2: Answer: Yes. Some possibilities are:

1. $\frac{6}{14} \div 2 = \frac{3}{14}$;

2. $\frac{3}{7} \div 2 = \frac{3}{14}$;

3. $\frac{6}{7} \div 4 = \frac{3}{14}$. There are more possibilities.

Task 3: Answer: 1st part: $\frac{1}{6}$

2nd part: Also $\frac{1}{6}$ (The rest was $\frac{5}{6}$, divided by 5 is $\frac{1}{6}$)

In total: $\frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$.

Task 4: Answer: Neither. The answers are equivalent fractions.

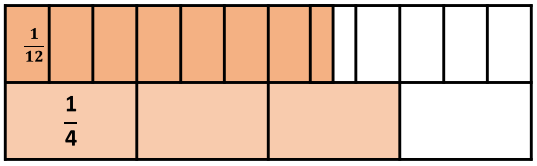
Task 5: Answer: 8

NC Objective: Associate a Fraction with Division and Calculate Decimal Fraction Equivalents for a Simple Fraction

Task 1: Answer: Each friend got 0.25 = $\frac{1}{4}$ of a peach. 4 friends shared one peach. She shared 8 peaches, therefore she had 8 x 4 = 32 friends.

Task 2: Answer: False. 2.3 > 1, $\frac{2}{3}$ < 1.

Task 3: Answer: I disagree with Zach. $\frac{3}{4}$ x 12 = 9 months.



Task 4: Answer: There are multiple possibilities:
0.12 - It is the only number that is less than half.
$\frac{9}{10}$ - It is the only number with one non-zero digit after the decimal point.

Task 5: Answer: Possible answers are: 5.5 = $\frac{11}{2}$, 7.5 = $\frac{15}{2}$, 9.5 = $\frac{19}{2}$.

NC Objective: Identify the Value of Each Digit in Numbers Given to 3 Decimal Places

Task 1: Answer: 7.903. The 0 in the hundredths place can be replaced with any other digit.

Task 2: Answer: 14.015
The digit 4 is in the ones place. In the other numbers, it's in the tenths place.
Other answers acceptable.

Task 3: Answer: True. In the fraction $\frac{7}{100}$, the digit 7 is in the hundredths place but in 0.7 the digit 7 is in the tenths place.

Task 4: Answer: 3.661; 3.751; 3.841; 3.932; 3.662.

Task 5: Answer: Sometimes.
As the hundreds digits are the same, the tens digits determine the larger of the two numbers.

NC Objective: Multiply and Divide Numbers by 10, 100 and 1,000 giving Answers up to Three Decimal Places

Task 1: Answer: There is one empty box because there are no numbers that can be > 7.32 if they have less than 7,230 thousandths (7.23)

		< 7.32
Number < 7,230 thousandths		0.057 x 100
Number > 703 hundredths	799 ÷ 100, 6.06 x 10	7,310 ÷ 1,000

Task 2: Answer: I disagree with Rosie. She would get the same answer if she divided 4.31 by 10.

Task 3: Answer: Each subsequent number is obtained by multiplying the previous number by 100.

Task 4: Answer: Yes, Malachi is correct. 803 ÷ 100 = 8.03

Task 5: Answer: 30

NC Objective: Multiply One-Digit Numbers with up to Two Decimal Places by Whole Numbers

Task 1: Answer:

		2	3	6
x				5
		0.	3	0
		1.	5	0
+		0.	0	0
	1	1.	8	0

Task 2: Answer: She will not have enough money, because 5.5 x 98 = 539p and 6.2 x 85 = 527p, so the total amount would be 539p + 527p = 1,066p = £10.66

Task 3: Answer: A = 6, B = 4.5.

Task 4: Answer: Yes, Esin is correct. 3.6 x 5 = 18 = 4.5 x 4

Task 5: Answer: 3.**8** x 6 **2**2. 8;
7.**25** x 4 = 29.

NC Objective: Use Written Division Methods in Cases Where the Answer has up to Two Decimal Places

Task 1: Answer:

$$3 \overline{)\, 6 \cdot 4\ ^{1}5\ 0} \quad = \quad 2 \cdot 1\ 5\ 0$$

Task 2: Answer: 8

Task 3: Answer: 8.44 ÷ 2 = 4.22, 3.48 ÷ 3 = 1.16, 11.67 ÷ 2 = 5. 835

Task 4: Answer: 110 and 315. The numbers end with 0 or 5.
Other examples could be 190, 490, and 745.

Task 5: Answer: 72.18 ÷ 3 = 24.06
24.06 ÷ 6 = **4.01cm**

NC Objective: Solve Problems Which Require Answers to be Rounded to Specified Degrees of Accuracy

Task 1: Answer: $\frac{5}{9}$ is equivalent to a reccuring decimal.

$\frac{5}{9}$ = 0.5555...

Task 2: Answer:

I: $\frac{1}{3}$ x 234 = 78 pages

II: $\frac{4}{9}$ x (234 - 78) = 69.333... ≈ 69 pages

234 – (78 + 69) = **87 pages**

Task 3: Answer: The answers are recurring decimals and they are rounded to the nearest hundredth.

$\frac{8}{15}$ ÷ 2 = 0.27 0.7 ÷ 9 = 0.08 $\frac{2}{3}$ x $\frac{2}{3}$ = 0.44

Task 4: Answer: The first hour: 9.36 ÷ 2 ≈ 4.5 so he needed 5 bottles.
First two hours: 2 x 9.36 ÷ 2 = 9.36 ≈ 9 bottles.

Task 5: Answer: They are both correct. Esin has recorded it as a remainder and Tia has rounded to the nearest hundredth.

NC Objective: Recall and Use Equivalences Between Simple Fractions, Decimals and Percentages, Including in Different Contexts

Task 1: Answer: 0.25 = 3/12 = 4/16 = 9/36.
0.75 = 15/20.

Task 2: Answer: A. False. 5/20 = 1/4 = 0.25.
B. False. 18/24 = 3/4 = 0.75 (equal to).
C. True. 0.75 = 3/4 and 5/20 = 1/4.
So 3/4 + 1/4 = 1.

Task 3: Answer: 0.25 = 1/4 = 2/8 = … = 8/32.
So the answer is A = 8 and B = 32.

Task 4: Answer: A = 750, B = 270, C = 90.
A – B = 480

Task 5: Answer: 0.75 of audience are men and women.
0.75÷ 3 = 0.25, so there are 2 x 0.25 = 0.50 = 50% women in the audience.

Task 6: Answer: Leanna is incorrect. She should multiply the numerator by 100 and divide the answer by the denominator.

Task 7: Answer: $\frac{4}{9}$ x 36 = $\frac{144}{9}$ = 16 students scored between 75 and 90.
0.75 x 16 = 12 boys.

Task 8: Answer: $\frac{1}{3}$ x 75 = 25
40% = 0.40, so 0.40 x 75 = 30
75 – (25 + 30) = **£20**