GREEN

1) Nicole and her brother ate an afternoon snack of popcorn when they came home from the park. Nicole ate $\frac{1}{2}$ cup of popcorn and her brother ate $\frac{1}{4}$ cup of popcorn. If there were $2\frac{2}{3}$ cups of popcorn in the container before their snack, how many cups were left after they finished?

$\frac{8}{3} - \frac{1}{2} - \frac{1}{4} = 1\frac{11}{12}$

2) The difference between the lengths of a paddle boat and a pier is $-7\frac{3}{4}$ feet. The pier is $18\frac{1}{2}$ feet long. How long is the paddle boat?

$x - \frac{37}{2} = \frac{-31}{4}$ $\quad \frac{?}{4} - \frac{74}{4} = \frac{-31}{4}$

$\frac{43}{4} = 10\frac{3}{4}$ ft

3) Mark, Gary, and Jill are on a family cell phone plan. They estimate that they have 7 hours of talk time for a weekend. Mark talked on his cell phone $2\frac{5}{6}$ hours over the weekend. Gary talked on his phone $1\frac{9}{10}$ hours. Jill talked on her cell phone for 1.5 hours. Did they go over 7 hours? If not, how many minutes do they have left to talk?

$7 - \frac{17}{6} - \frac{19}{10} - \frac{3}{2} = \frac{23}{30}$

$\frac{46}{60}$ = 46 minutes remaining

4) Kari has a total of $12\frac{3}{4}$ yards of string for her craft project. She cuts 4.7 yards of string on the first day. The next day she uses $3\frac{1}{5}$ yards of string. She needs 4¼ yards of string to finish her project. Will she have enough string? If so, how much will she have left over? If not, how much string does she need?

$12.75 - 4.7 - 3.2 = 4.85 - 4.25 =$ 0.6 or $\frac{3}{5}$ remaining

Simplify each expression.

4) $\frac{9}{14} + \left(-\frac{2}{7}\right)$

$\frac{5}{14}$

5) $2\frac{5}{6} + \left(-\frac{8}{15}\right)$

$2\frac{3}{10}$

6) $4 + \left(-1\frac{2}{3}\right)$

$2\frac{1}{3}$

7) $-\frac{1}{2} - \left(-\frac{5}{9}\right)$

$\frac{1}{18}$

8) $-5 - \frac{5}{3}$

$-6\frac{2}{3}$

9) $-8\frac{3}{8} - 10\frac{1}{6}$

$-18\frac{13}{24}$

10) $2\frac{1}{6} - \frac{8}{3} + \left(-4\frac{7}{9}\right)$

$-5\frac{5}{18}$

11) $-\frac{12}{5} + \left|-\frac{13}{6}\right| + \left(-3\frac{2}{3}\right)$

$-3\frac{9}{10}$

12) $2\frac{3}{10} + \left(-3\frac{2}{5}\right) - \left(-\frac{9}{10}\right)$

$-\frac{2}{10} = -\frac{1}{5}$

13) Check how one student solve this problem. Is it correct? If not, describe and correct the error.

Incorrect
No common denominator.

$\frac{3}{4} - \frac{9}{2} = \frac{3-9}{4-2} = \frac{-6}{2} = -3$

$\frac{3}{4} - \frac{18}{4} = \frac{-15}{4} = -3\frac{3}{4}$

EXTENSION

Write an equation and then solve using either fact families or inverse operations.

14) The difference between the lengths of a paddle boat and a pier is $-7\frac{3}{4}$ feet. The pier is $18\frac{1}{2}$ feet long. How long is the paddle boat?

$x - 18\frac{1}{2} = -7\frac{3}{4}$

$x = -7\frac{3}{4} + 18\frac{1}{2}$

$10\frac{3}{4}$ ft

Solve each equation using either fact families or inverse operations.

15) $\frac{1}{2} = q + \frac{2}{3}$

$\frac{3}{6} = \frac{?}{6} + \frac{4}{6}$

$\frac{-1}{6}$

16) $p - 3\frac{1}{6} = -2\frac{1}{2}$

$\frac{?}{6} - \frac{19}{6} = \frac{-5}{2}$

$\frac{?}{6} - \frac{19}{6} = \frac{-15}{6}$

$\frac{4}{6} = \frac{2}{3}$

17) $-2\frac{1}{4} = r - \frac{4}{5}$

$\frac{-9}{4} = r - \frac{4}{5}$

$\frac{-45}{20} = \frac{?}{20} - \frac{16}{20}$

$\frac{-29}{20} = -1\frac{9}{20}$

18) $w + 3\frac{3}{8} = 1\frac{5}{6}$

$w + \frac{27}{8} = \frac{11}{6}$

$\frac{?}{24} + \frac{81}{24} = \frac{44}{24}$

$\frac{-37}{24} = -1\frac{13}{24}$

19) $4\frac{2}{5} + k = -3\frac{2}{11}$

$\frac{22}{5} + k = \frac{-35}{11}$

$\frac{242}{55} + \frac{?}{55} = \frac{-175}{55}$

$\frac{-417}{55} = -7\frac{32}{55}$

20) $q + \frac{5}{9} = \frac{1}{6}$

$\frac{?}{36} + \frac{20}{36} = \frac{6}{36}$

$\frac{-14}{36} = \frac{-7}{18}$

YELLOW

1) $-\frac{7}{8}+\frac{1}{4}$

$-\frac{5}{8}$

2) $\frac{1}{3}-(-\frac{1}{3})$

$\frac{2}{3}$

3) $-6\frac{1}{3}+\frac{20}{3}$

$\frac{1}{3}$

4) $-3\frac{1}{3}-\frac{5}{6}$

$-4\frac{1}{6}$

5) $-2+\frac{7}{10}$

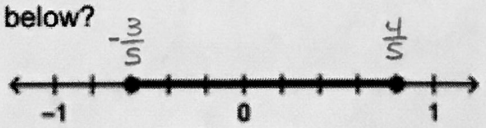
$-1\frac{3}{10}$

6) $4\frac{1}{2}-5\frac{1}{4}$

$-\frac{3}{4}$

Select all correct answers.

7) Which of the following expressions give the distance between the endpoints of the segment shown on the number line below?



(A) $\left|-\frac{3}{5}-\left(-\frac{4}{5}\right)\right|$

(C) $-\frac{3}{5}-\frac{4}{5}$

(E) $\left|\frac{4}{5}-\left(-\frac{3}{5}\right)\right|$

(B) $\left|-\frac{3}{5}-\frac{4}{5}\right|$

(D) $\left|\frac{3}{5}-\frac{4}{5}\right|$

1) Nicole and her brother ate an afternoon snack of popcorn when they came home from the park. Nicole ate $\frac{1}{2}$ cup of popcorn and her brother ate $\frac{1}{4}$ cup of popcorn. If there were $2\frac{2}{3}$ cups of popcorn in the container before their snack, how many cups were left after they finished?

$1\frac{11}{12}$ cups

2) The difference between the lengths of a paddle boat and a pier is $-7\frac{3}{4}$ feet. The pier is $18\frac{1}{2}$ feet long. How long is the paddle boat?

$10\frac{3}{4}$ ft

3) Mark, Gary, and Jill are on a family cell phone plan. They estimate that they have 7 hours of talk time for a weekend. Mark talked on his cell phone $2\frac{5}{6}$ hours over the weekend. Gary talked on his phone $1\frac{9}{10}$ hours. Jill talked on her cell phone for 1.5 hours. Did they go over 7 hours? If not, how many minutes do they have left to talk?

46 min. remain

4) Kari has a total of $12\frac{3}{4}$ yards of string for her craft project. She cuts 4.7 yards of string on the first day. The next day she uses $3\frac{1}{5}$ yards of string. She needs 4¼ yards of string to finish her project. Will she have enough string? If so, how much will she have left over? If not, how much string does she need?

0.6 or $\frac{3}{5}$ remain

Simplify each expression.

4) $\frac{9}{14}+\left(-\frac{2}{7}\right)$

$\frac{5}{14}$

5) $2\frac{5}{6}+\left(-\frac{8}{15}\right)$

$2\frac{3}{10}$

6) $4+\left(-1\frac{2}{3}\right)$

$2\frac{1}{3}$

7) $-\frac{1}{2}-\left(-\frac{5}{9}\right)$

$\frac{1}{18}$

8) $-5-\frac{5}{3}$

$-6\frac{2}{3}$

9) $-8\frac{3}{8}-10\frac{1}{6}$

$-18\frac{13}{24}$

10) $2\frac{1}{6}-\frac{8}{3}+\left(-4\frac{7}{9}\right)$

$-5\frac{5}{18}$

11) $-\frac{12}{5}+\left|-\frac{13}{6}\right|+\left(-3\frac{2}{3}\right)$

$-3\frac{9}{10}$

12) $2\frac{3}{10}+\left(-3\frac{2}{5}\right)-\left(-\frac{9}{10}\right)$

$-\frac{1}{5}$

13) Check how one student solve this problem. Is it correct? If not, describe and correct the error.

$$\frac{3}{4}-\frac{9}{2}=\frac{3-9}{4-2}=\frac{-6}{2}=-3$$

Incorrect
No common denominator

$$\frac{3}{4}-\frac{18}{4}=\frac{-15}{4}=-3\frac{3}{4}$$

RED

1)

$$-\frac{5}{8}+\frac{11}{12}$$

Common Denominator: Yes or No
If no,
Multiples of 8: 8, 16, 24, 32, 40
Multiples of 12: 12, 24, 36
LCD = 24
Change Fraction: $\frac{-5\cdot3+11\cdot2}{24}$

Simplify: $=\frac{-15+22}{24}$

$=-\frac{7}{24}$

2)

$$\frac{1}{3}-(-\frac{1}{3})$$

Common Denominator: Yes or No
If no,
Multiples of 3:
Multiples of 3:
LCD = 3
Change Fraction: $\frac{1}{3}+\frac{1}{3}$

Simplify:

$\frac{2}{3}$

3)

$$-\frac{7}{8}+\frac{1}{4}$$

Common Denominator: Yes or No
If no,
Multiples of 4: 4, 8, 12, 16
Multiples of 8: 8, 16, 24, 32
LCD = 8
Change Fraction: $\frac{-7}{8}+\frac{2}{8}$

Simplify:

$\frac{-5}{8}$

4)

$$-3\frac{1}{3}-\frac{5}{6}$$

Common Denominator: Yes or No
If no,
Multiples of 3: 3, 6, 9, 12
Multiples of 6: 6, 12, 18, 24
LCD = 6
Change to Improper: $\frac{-10}{3}-\frac{5}{6}$

Change Fraction: $\frac{-20}{4}-\frac{5}{6}=-\frac{25}{6}$

Simplify:

$-4\frac{1}{6}$

5)

$$-2+\frac{7}{10}$$

Common Denominator: Yes or No
If no,
Multiples of 1 (because 2 = 2/1): 1, 2, 3, 4, 5, ... 10
Multiples of 10: 10
LCD = 10
Change Fraction: $\frac{-2}{1}+\frac{7}{10}\rightarrow-\frac{20}{10}+\frac{7}{10}$

Simplify:

$\frac{-13}{10}=-1\frac{3}{10}$

6)

$$4\frac{1}{2}-5\frac{1}{4}$$

Common Denominator: Yes or No
If no,
Multiples of 2: 2, 4
Multiples of 4: 4
LCD = 4
Change to Improper: $\frac{9}{2}-\frac{21}{4}$

Change Fraction: $\frac{18}{4}-\frac{21}{4}$

Simplify:

$\frac{-3}{4}$

7) What is an equivalent expression for $\frac{2}{3}-\frac{4}{5}$?

(A) $\frac{2}{3}+\frac{4}{5}$

(B) $\frac{2}{3}+\left(-\frac{4}{5}\right)$

(C) $-\frac{2}{3}+\frac{4}{5}$

(D) $-\frac{2}{3}+\left(-\frac{4}{5}\right)$

8) $-\frac{11}{6}+\frac{1}{6}=\frac{-7}{6}$

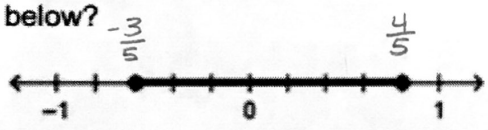
Emily thinks that $-\frac{11}{6}-\left(-\frac{2}{3}\right)$ is $-\frac{5}{2}$.

Identify the error that Emily made. Then correct Emily's error and find the correct difference. Show your work.

Emily added -11 and -4 to get -15 as the numerator. It should be as shown above.

9) **Select all correct answers.**

Which of the following expressions give the distance between the endpoints of the segment shown on the number line below?



|x - y|

(A) $\left|-\frac{3}{5}-\left(-\frac{4}{5}\right)\right|$

(B) $\left|-\frac{3}{5}-\frac{4}{5}\right|$

(C) $-\frac{3}{5}-\frac{4}{5}$

(D) $\left|\frac{3}{5}-\frac{4}{5}\right|$

(E) $\left|\frac{4}{5}-\left(-\frac{3}{5}\right)\right|$

10) Margie has $5\frac{1}{4}$ cups of beans in a jar. She takes out $4\frac{3}{4}$ cups of beans for a recipe. When making the dish, she decides to cut down on the beans used and returns $1\frac{1}{4}$ cups of beans to the jar. Then Margie adds another $4\frac{3}{4}$ cups of beans from a bag to the jar.

a. Write an expression that models this situation.

$5\frac{1}{4}-4\frac{3}{4}+1\frac{1}{4}+4\frac{3}{4}$

b. How many beans are in the jar after Margie refills the jar? Show how you used the properties of addition to find this value.

$\frac{21}{4}-\frac{19}{4}+\frac{5}{4}+\frac{19}{4}$

$\frac{21}{4}+\frac{5}{4}=\frac{26}{4}=6\frac{2}{4}=$

$6\frac{1}{2}$ cups