1.5 HOMEWORK HANDOUT OPERATIONS WITH RATIONAL NUMBERS

PART A

1) Evaluate.

a) $\dfrac{3}{17}+\dfrac{9}{17}$ b) $\dfrac{6}{7}-\dfrac{4}{7}$ c) $\dfrac{2}{3}+\dfrac{5}{3}$ d) $\dfrac{1}{5}-\dfrac{4}{5}$ e) $-\dfrac{2}{9}+\dfrac{7}{9}$ f) $\dfrac{4}{3}+\left(-\dfrac{14}{3}\right)$

2) Evaluate. Express each answer as a fraction in lowest terms.

a) $\dfrac{2}{9}+\dfrac{1}{3}$ b) $\dfrac{3}{4}-\dfrac{5}{12}$ c) $\dfrac{4}{11}+\dfrac{1}{3}$ d) $\dfrac{5}{6}-\dfrac{3}{8}$ e) $\dfrac{11}{4}-\dfrac{3}{2}$ f) $-\dfrac{4}{5}+\dfrac{1}{3}$

g) $\dfrac{5}{3}-\dfrac{9}{2}$ h) $\dfrac{11}{12}+\left(-\dfrac{9}{8}\right)$ i) $5-\dfrac{17}{6}$ j) $\dfrac{11}{18}-\left(-\dfrac{7}{12}\right)$ k) $\dfrac{-7}{4}+\left(-\dfrac{15}{6}\right)$

3) Evaluate. Express each answer as a mixed number.

a) $3\dfrac{4}{5}+\left(-1\dfrac{7}{10}\right)$ b) $2\dfrac{2}{7}-4\dfrac{3}{5}$ c) $-5\dfrac{1}{6}+3\dfrac{2}{3}$ d) $10\dfrac{8}{15}+2$ e) $-4\dfrac{5}{6}-10\dfrac{6}{7}$

f) $\dfrac{-5}{3}+5\dfrac{6}{11}$ g) $7-12\dfrac{3}{4}$ h) $-8+\left(\dfrac{11}{4}\right)$ i) $\dfrac{15}{-6}-2\dfrac{7}{9}$ j) $-3\dfrac{5}{6}-\left(-4\dfrac{3}{8}\right)$

4) Multiply. Express each answer as a fraction in lowest terms.

a) $7\times\dfrac{5}{8}$ b) $\dfrac{4}{9}\times\dfrac{5}{9}$ c) $\dfrac{1}{4}\left(\dfrac{7}{6}\right)$ d) $4\left(-\dfrac{3}{8}\right)$ e) $-\dfrac{9}{4}\left(\dfrac{5}{6}\right)$ f) $\left(-\dfrac{7}{10}\right)\left(-\dfrac{5}{3}\right)$

5) Divide. Express each answer as a fraction in lowest terms.

a) $\dfrac{2}{3}\div\dfrac{1}{2}$ b) $\dfrac{9}{5}\div\dfrac{3}{4}$ c) $20\div\dfrac{8}{3}$ d) $\dfrac{6}{13}\div4$ e) $-\dfrac{7}{16}\div\dfrac{3}{2}$ f) $\dfrac{8}{9}\div(-4)$

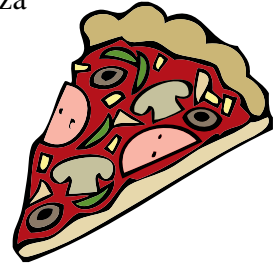6) Multiply. Express each answer as a mixed number, where applicable.

a) $3\times2\dfrac{6}{7}$ b) $4\dfrac{3}{5}\times2\dfrac{1}{3}$ c) $\left(-7\dfrac{3}{4}\right)(-2)$ d) $\dfrac{8}{5}\left(-9\dfrac{10}{11}\right)$ e) $-3\dfrac{5}{6}\times6$

7) Divide. Express each answer as a mixed number, where applicable.

a) $4\dfrac{2}{5}\div2$ b) $3\dfrac{1}{2}\div2\dfrac{1}{4}$ c) $-4\dfrac{2}{3}\div3\dfrac{4}{5}$ d) $-6\div\left(-4\dfrac{7}{8}\right)$ e) $6\dfrac{7}{10}\div\dfrac{2}{3}$

8) Aiguo, Destiny and Claudio shared a 12 slice pizza. Aiguo ate $\frac{1}{3}$ of the pizza and Destiny ate $\frac{1}{4}$ of the pizza. Claudio ate the remaining slices.
   a) What fraction of the pizza did Aiguo and Destiny eat together?
   b) What fraction of the pizza did Claudio eat?
   c) How many slices did each person eat?

9) At a school talent show, one half of the acts were musical. Three quarters of the musical acts were solo performances. What fraction of the talent show consisted of solo musical performances?

10) Of the students in a class, $\frac{3}{4}$ take the bus to school. $\frac{3}{16}$ of the students in the class walk to school. The remaining students are driven to school in a car.
   a) What fraction of the class is driven to school in a car?
   b) What fraction of the class does not walk to school?
   c) Is it possible that there is a total of 25 students in the class? Explain.

11) A gingerbread cookie recipe calls for $\frac{3}{4}$ cup of sugar, 2 cups of flour, $\frac{1}{3}$ cup of dark molasses, $\frac{1}{2}$ cup of water and $\frac{2}{3}$ cup of shortening. Determine the combined amount, in cups, of these ingredients. Express your answer as a mixed number.

12) Holly took $1\frac{4}{5}$ hours to mow her lawn.
   a) It took Raymond twice as long to mow his lawn. Express this time as a mixed number.
   b) Jerika mowed her lawn in half the time it took Holly. Express this time as a mixed number.
   c) Manny mowed his lawn in 1 hour and 24 minutes. Express this time in hours as a mixed number in simplest form.
   d) Express the time it took Holly to mow her lawn as a combination of hours and minutes.

13) Determine the area and perimeter.

$4\frac{1}{5}$ cm

$5\frac{2}{3}$ cm
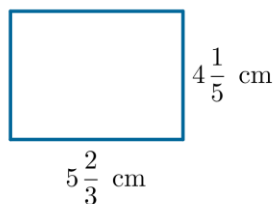
14) Determine the area.

$4\frac{3}{8}$ inches

$2\frac{3}{4}$ inches
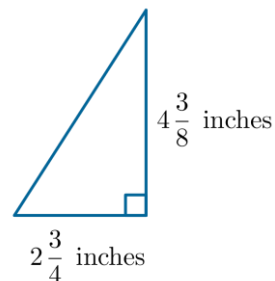
ANSWERS

1) a) $\dfrac{12}{17}$ b) $\dfrac{2}{7}$ c) $\dfrac{7}{3}$ d) $-\dfrac{3}{5}$ e) $\dfrac{5}{9}$ f) $-\dfrac{10}{3}$

2) a) $\dfrac{5}{9}$ b) $\dfrac{1}{3}$ c) $\dfrac{23}{33}$ d) $\dfrac{11}{24}$ e) $\dfrac{5}{4}$ f) $-\dfrac{7}{15}$ g) $-\dfrac{17}{6}$ h) $-\dfrac{5}{24}$ i) $\dfrac{13}{6}$

    j) $\dfrac{43}{36}$ k) $-\dfrac{17}{4}$

3) a) $2\dfrac{1}{10}$ b) $-2\dfrac{11}{35}$ c) $-1\dfrac{1}{2}$ d) $12\dfrac{8}{15}$ e) $-15\dfrac{29}{42}$ f) $3\dfrac{29}{33}$ g) $-5\dfrac{3}{4}$

    h) $-5\dfrac{1}{4}$ i) $-5\dfrac{5}{18}$ j) $\dfrac{13}{24}$

4) a) $\dfrac{35}{8}$ b) $\dfrac{20}{81}$ c) $\dfrac{7}{24}$ d) $-\dfrac{3}{2}$ e) $-\dfrac{15}{8}$ f) $\dfrac{7}{6}$

5) a) $\dfrac{4}{3}$ b) $\dfrac{12}{5}$ c) $\dfrac{15}{2}$ d) $\dfrac{3}{26}$ e) $-\dfrac{7}{24}$ f) $-\dfrac{2}{9}$

6) a) $8\dfrac{4}{7}$ b) $10\dfrac{11}{15}$ c) $15\dfrac{1}{2}$ d) $-15\dfrac{47}{55}$ e) -23

7) a) $2\dfrac{1}{5}$ b) $1\dfrac{5}{9}$ c) $-1\dfrac{13}{57}$ d) $1\dfrac{3}{13}$ e) $10\dfrac{1}{20}$

8) a) $\dfrac{7}{12}$ b) $\dfrac{5}{12}$ c) Aiguo ate 4 slices, Destiny ate 3 slices and Claudio ate 5 slices.

9) $\dfrac{3}{8}$

10) a) $\dfrac{1}{16}$ b) $\dfrac{13}{16}$ c) No, since the number of students should be a whole number and, for

    example, $\dfrac{3}{4}$ of 25 is not a whole number.

11) $4\dfrac{1}{4}$ cups

12) a) $3\dfrac{3}{5}$ hours   b) $\dfrac{9}{10}$ hour   c) $1\dfrac{2}{5}$ hours   d) 1 hour and 48 minutes

13) Area $= 23\dfrac{4}{5}$ cm^2, Perimeter $= 19\dfrac{11}{15}$ cm   **14)** Area $= 6\dfrac{1}{64}$ inches^2