

**GRADE 10 ESSENTIAL - FRACTIONS WORKBOOK ANSWERS**  
**PRISM\_BLUE\_FRACTIONS**  
**ANSWER KEY**

This is the answer key for a fully satisfactory fractions workbook.

There should be few, if any, errors in this answer key.

The entire fraction workbook will typically occupy 320 minutes of your life!

The best 5 hours and 20 minutes you ever invested.

**Lesson 1 - Multiplication**

1a.  $\frac{3}{20}$       b.  $\frac{8}{15}$       c.  $\frac{35}{96}$       d.  $\frac{6}{175}$

2a.  $\frac{1}{6}$       b.  $\frac{8}{35}$       c.  $\frac{27}{160}$       d.  $\frac{1}{24}$

3a.  $\frac{25}{64}$       b.  $\frac{18}{25}$       c.  $\frac{2}{105}$       d.  $\frac{9}{140}$

4a.  $\frac{15}{56}$       b.  $\frac{15}{56}$       c.  $\frac{64}{125}$       d.  $\frac{8}{27}$

5a.  $\frac{6}{25}$       b.  $\frac{21}{80}$       c.  $\frac{25}{108}$       d.  $\frac{24}{125}$

6a.  $\frac{3}{10}$       b.  $\frac{35}{72}$       c.  $\frac{45}{224}$       d.  $\frac{8}{105}$

**Lesson 2 – GREATEST COMMON FACTOR**

Need GCF so you can reduce fractions to simplest form

Factors	Common Factors	Greatest Common Factor (GCF)
1. <b>4:</b> 1,2,4 <b>6:</b> 1,2,3,6	1,2	2
2. <b>10:</b> 1,2,5,10 <b>12:</b> 1,2,3,4,6,12	1,2	2
3. <b>16:</b> 1,2,4,8,16 <b>24:</b> 1,2,3,4,6,8,12,24	1,2,4,8	8
4. <b>9:</b> 1,3,9 <b>16:</b> 1,2,4,8,16	1	1
5. <b>18:</b> 1,2,3,6,9,18 <b>20:</b> 1,2,4,5,10,20	1,2	2
6. <b>25:</b> 1,5,25 <b>24:</b> 1,2,3,4,6,8,12,24	1	1
7. <b>48:</b> 1,2,3,4,6,8,12,16,24,48 <b>36:</b> 1,2,3,4,6,9,12,18,36	1,2,3,4,6,12	12

**LESSON 3 – SIMPLEST FORM**

(a decent calculator will simplify fractions for you too!)

1.a.  $\frac{2}{5}$       b.  $\frac{3}{5}$       c.  $\frac{7}{10}$

2.a.  $\frac{4}{9}$       b.  $\frac{20}{21}$       c.  $\frac{1}{2}$

3.a.  $2\frac{3}{5}$       b.  $6\frac{3}{5}$       c.  $8\frac{2}{3}$

4.a.  $\frac{2}{7}$       b.  $3\frac{2}{9}$       c.  $7\frac{3}{4}$

5.a.  $5\frac{2}{5}$       b.  $\frac{2}{7}$       c.  $\frac{3}{5}$

**LESSON 4 – SIMPLIFYING PRODUCTS**

(Instead of simplifying at the final step, simplify earlier amongst the factors; generally easier).

1.a.  $\frac{2}{5}$       b.  $\frac{1}{4}$       c.  $\frac{4}{15}$       d.  $\frac{28}{45}$

2.a.  $\frac{5}{9}$       b.  $\frac{28}{45}$       c.  $\frac{35}{66}$       d.  $\frac{3}{14}$

3.a.  $\frac{14}{33}$       b.  $\frac{9}{13}$       c.  $\frac{14}{33}$       d.  $\frac{10}{27}$

4.a.  $\frac{1}{4}$       b.  $\frac{3}{32}$       c.  $\frac{4}{9}$       d.  $\frac{8}{15}$

5.a.  $\frac{3}{10}$       b.  $\frac{16}{21}$       c.  $\frac{10}{21}$       d.  $\frac{16}{25}$

**LESSON 5 – SIMPLIFYING PRODUCTS**Simplifying products of *three* fractions!

1.a.  $\frac{1}{2}$     b.  $\frac{1}{6}$     c.  $\frac{3}{4}$     d.  $\frac{1}{10}$

2.a.  $\frac{3}{4}$     b.  $\frac{1}{6}$     c.  $\frac{5}{6}$     d.  $\frac{1}{2}$

3.a.  $\frac{1}{2}$     b.  $\frac{1}{3}$     c.  $\frac{2}{3}$     d.  $\frac{1}{3}$

4.a.  $\frac{2}{5}$     b.  $\frac{3}{5}$     c.  $\frac{1}{4}$     d.  $\frac{1}{4}$

5.a.  $\frac{1}{2}$     b.  $\frac{1}{4}$     c.  $\frac{1}{6}$     d.  $\frac{1}{3}$

**LESSON 6 RENAMING FRACTIONS AND MIXED NUMBERS**

Changing between 'improper' and 'mixed' numbers. (I prefer to call improper fractions 'pure fractions' since there is no 'whole' portion just pure fraction)

1.a.  $\frac{17}{10}$     b.  $\frac{5}{2}$     c.  $\frac{23}{5}$     d.  $\frac{7}{4}$     e.  $\frac{8}{1}$

2.a.  $\frac{11}{4}$     b.  $\frac{23}{6}$     c.  $\frac{16}{3}$     d.  $\frac{12}{1}$     e.  $\frac{55}{8}$

3.a.  $2\frac{1}{4}$     b.  $4\frac{1}{5}$     c.  $1\frac{1}{2}$     d.  $2\frac{1}{4}$     e.  $3\frac{4}{5}$

4.a.  $5\frac{3}{8}$     b.  $6\frac{2}{5}$     c.  $5\frac{1}{2}$     d.  $1\frac{1}{3}$     e.  $6\frac{1}{2}$

5.a.  $7\frac{1}{3}$     b.  $5\frac{1}{7}$     c.  $2\frac{1}{2}$     d.  $6\frac{3}{4}$     e.  $5\frac{1}{8}$

**LESSON 7 – MULTIPLICATION OF MIXED NUMBERS**

(rename as pure improper fractions first; reduce, multiply, write as Mixed number if necessary)

1.a.  $22\frac{2}{3}$  b. 42 c. 57

2.a. 2 b. 3 c.  $2\frac{1}{2}$

3.a.  $\frac{5}{12}$  b.  $\frac{15}{16}$  c. 7

4.a. 4 b.  $1\frac{1}{2}$  c.  $\frac{1}{2}$

5.a. 4 b.  $\frac{5}{9}$  c.  $2\frac{1}{12}$

**LESSON 7 – PROBLEM SOLVING**

1. 9kg 2.  $1\frac{1}{6}$  3.  $9\frac{9}{10}$  4. 22

5. 36 6.  $93\frac{1}{3}$  7. 276 8.  $13\frac{14}{15}$

**LESSON 8 – RECIPROCAL**

If I wash my dog three times every five months,  $\frac{3}{5}$ , then it takes five months for every three washes,  $\frac{5}{3}$ . We are saying the same thing just upside down!

1.a. Yes b. Yes c. No

2.a. No b. Yes c. No

3.a.  $\frac{6}{5}$  b.  $\frac{8}{7}$  c.  $\frac{3}{1}$  d.  $\frac{1}{6}$  e.  $\frac{1}{4}$  f.  $\frac{1}{8}$

4.a.  $\frac{2}{5}$  b.  $\frac{3}{10}$  c.  $\frac{4}{5}$  d.  $\frac{9}{4}$  e.  $\frac{1}{5}$  f.  $\frac{8}{25}$

5.a.  $\frac{3}{14}$  b.  $\frac{10}{1}$  c.  $\frac{1}{12}$  d.  $\frac{5}{8}$  e.  $\frac{12}{7}$  f.  $\frac{16}{45}$

**LESSON 9 – DIVISION**

*Division is easy, same as multiply with one extra step first*

- |                      |                   |                    |                   |
|----------------------|-------------------|--------------------|-------------------|
| 1.a. $1\frac{1}{2}$  | b. $\frac{2}{3}$  | c. $1\frac{1}{2}$  | d. $1\frac{1}{6}$ |
| 2.a. $1\frac{3}{4}$  | b. 6              | c. $1\frac{3}{5}$  | d. $1\frac{1}{3}$ |
| 3.a. 10              | b. $1\frac{1}{6}$ | c. $\frac{3}{10}$  | d. $\frac{5}{6}$  |
| 4.a. $11\frac{2}{3}$ | b. 22             | c. $41\frac{1}{3}$ | d. $1\frac{1}{2}$ |
| 5.a. 25              | b. $2\frac{5}{7}$ | c. $\frac{2}{3}$   | d. $4\frac{1}{2}$ |

**LESSON 10 – DIVISION WITH MIXED NUMBERS**

- |                    |                    |                    |                    |
|--------------------|--------------------|--------------------|--------------------|
| 1a. $\frac{3}{4}$  | b. 4               | c. $\frac{1}{4}$   | d. 4               |
| 2a. 1              | b. $\frac{4}{5}$   | c. $1\frac{4}{45}$ | d. $\frac{18}{25}$ |
| 3a. $\frac{7}{15}$ | b. $1\frac{7}{20}$ | c. 2               | d. $\frac{2}{5}$   |
| 4a. $2\frac{2}{3}$ | b. $1\frac{1}{2}$  | c. $\frac{17}{32}$ | d. $2\frac{2}{3}$  |

**LESSON 10 PROBLEM SOLVING**

1. 15L    2. 55L    3. 9 lessons    4.  $1\frac{3}{4}$  hours  
 5. 6 people    6. 15 pages/hr    7. 5 containers;  $\frac{1}{3}$  of another

**LESSON 11 ADDITION AND SUBTRACTION**

Adding and subtracting fractions is fairly difficult at first!

- |                    |                   |                   |                  |                   |                   |
|--------------------|-------------------|-------------------|------------------|-------------------|-------------------|
| 1.a. $\frac{4}{5}$ | b. $1\frac{5}{8}$ | c. $1\frac{1}{2}$ | d. $\frac{1}{5}$ | e. $\frac{3}{8}$  | f. $\frac{1}{4}$  |
| 2.a. $\frac{4}{5}$ | b. $\frac{1}{2}$  | c. $\frac{3}{4}$  | d. $\frac{1}{6}$ | e. $\frac{1}{3}$  | f. 0              |
| 3.a. $\frac{7}{8}$ | b. $1\frac{3}{7}$ | c. $2\frac{1}{2}$ | d. 1             | e. $1\frac{4}{5}$ | f. $2\frac{1}{4}$ |

**LESSON 11 PROBLEM SOLVING**

1.  $1\frac{1}{5}$

2.  $\frac{3}{5}$

3.  $1\frac{1}{8}$

4.  $\frac{1}{2}$

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

6.  $\frac{1}{6}$

7.  $\frac{1}{2}$

8.  $1\frac{7}{12}$

*lol, who the heck breaks time into twelfths!? Isn't that like 5 minutes?*

**LESSON 12 – EQUIVALENT FRACTIONS**

(this is pretty much ‘un-reducing’; ‘un-simplifying’, making the numerator and denominator bigger. Don’t mess with any whole number part)

1.a.  $\frac{8}{16}$

b.  $\frac{9}{12}$

c.  $\frac{9}{15}$

2.a.  $\frac{8}{10}$

b.  $\frac{35}{45}$

c.  $\frac{15}{36}$

3.a.  $\frac{21}{24}$

b.  $\frac{5}{30}$

c.  $\frac{25}{60}$

4.a.  $1\frac{4}{6}$

b.  $2\frac{25}{40}$

c.  $4\frac{2}{8}$

5.a.  $3\frac{16}{18}$

b.  $6\frac{42}{60}$

c.  $7\frac{20}{24}$

**LESSON 13 ADDITION AND SUBTRACTION**

Adding fractions with different denominators and no common factor in denominator (different size slices of pizza) is quite a bit more work, but not too hard!)

1.a.  $1\frac{4}{15}$

b.  $1\frac{1}{12}$

c.  $1\frac{5}{24}$

d.  $1\frac{1}{6}$

2.a.  $\frac{1}{10}$

b.  $\frac{7}{15}$

c.  $\frac{5}{24}$

d.  $\frac{1}{12}$

3.a.  $5\frac{3}{20}$

b.  $6\frac{17}{40}$

c.  $6\frac{1}{6}$

d.  $7\frac{29}{30}$

4.a.  $2\frac{1}{6}$

b.  $3\frac{1}{30}$

c.  $\frac{1}{12}$

d.  $1\frac{13}{60}$

**LESSON 14 – ADDITION AND SUBTRACTION**

Sometimes you only need to rename one fraction, the other(s) can stay the same

- 1a.  $1\frac{1}{4}$       b.  $1\frac{5}{8}$       c.  $1\frac{2}{9}$       d.  $\frac{3}{4}$
- 2a.  $4\frac{3}{4}$       b.  $10\frac{3}{16}$       c.  $12\frac{1}{8}$       d.  $7\frac{2}{3}$
- 3a.  $\frac{2}{5}$       b.  $\frac{1}{2}$       c.  $\frac{3}{8}$       d.  $\frac{5}{16}$
- 4a.  $1\frac{1}{6}$       b.  $3\frac{3}{8}$       c.  $3\frac{7}{20}$       d.  $2\frac{1}{12}$

**LESSON 14 - PROBLEM SOLVING**

1.  $\frac{1}{8}$  \$      2.  $1\frac{5}{8}$  \$      3.  $4\frac{3}{8}$  \$      4.  $24\frac{1}{2}$  \$
5.  $3\frac{1}{8}$  \$      6.  $\frac{1}{12}$  L      7.  $5\frac{2}{5}$  kg

**LESSON 15 – ADDITION AND SUBTRACTION**

Adding and Subtracting when denominators have a common factor

- 1a.  $\frac{13}{24}$       b.  $\frac{11}{12}$       c.  $\frac{17}{30}$       d.  $1\frac{5}{18}$
- 2a.  $3\frac{1}{20}$       b.  $5\frac{19}{30}$       c.  $10\frac{29}{36}$       d.  $13\frac{8}{15}$
- 3a.  $\frac{1}{12}$       b.  $\frac{1}{18}$       c.  $\frac{19}{48}$       d.  $\frac{4}{75}$
- 4a.  $1\frac{7}{12}$       b.  $3\frac{1}{30}$       c.  $4\frac{1}{10}$       d.  $6\frac{13}{30}$

**LESSON 15 PROBLEM SOLVING**

1.  $1\frac{7}{12}$  hours      2. Wednesday;  $\frac{1}{15}$  hours      3.  $1\frac{13}{20}$  hours
4.  $2\frac{5}{16}$  minutes      5. Second problem,  $\frac{1}{8}$  minutes
6. Brenda,  $\frac{49}{60}$  longer      7.  $\frac{7}{12}$  hours

**SUBTRACTION (With Renaming)**

(sometimes you have to borrow from the whole number and rename the numbers!)

1a.  $6\frac{1}{8}$       b.  $8\frac{7}{10}$       c.  $2\frac{1}{2}$       d.  $1\frac{3}{7}$

2a.  $1\frac{3}{4}$       b.  $2\frac{13}{15}$       c.  $5\frac{1}{8}$       d.  $\frac{5}{6}$

3a.  $1\frac{1}{4}$       b.  $1\frac{5}{6}$       c.  $4\frac{1}{6}$       d.  $2\frac{7}{24}$

4a.  $4\frac{5}{6}$       b.  $\frac{13}{30}$       c.  $2\frac{35}{36}$       d.  $4\frac{19}{20}$

**LESSON 16 PROBLEM SOLVING**

1.  $1\frac{1}{4}$  hours      2.  $\frac{7}{30}$  hours      3.  $2\frac{7}{20}$  hours

4.  $1\frac{7}{40}$  hours      5.  $1\frac{1}{2}$  hours

*lol, who the heck says: "see you in  $7/30^{th}$ s of an hour!". Isn't that really 14 minutes since you earth people do time in  $60^{th}$ s!*

**PRACTICE TEST**

1a.  $\frac{4}{9}$       b.  $\frac{2}{3}$       c.  $\frac{4}{15}$       d.  $\frac{1}{4}$

2a. 90      b. 6      c.  $6\frac{2}{3}$       d.  $38\frac{1}{2}$

3a.  $\frac{24}{25}$       b.  $2\frac{11}{12}$       c.  $10\frac{2}{3}$       d. 4

4a.  $\frac{4}{5}$       b.  $1\frac{4}{9}$       c.  $8\frac{1}{12}$       d.  $3\frac{2}{15}$

5a.  $\frac{3}{5}$       b.  $\frac{27}{56}$       c.  $4\frac{3}{4}$       d.  $1\frac{7}{10}$

*There, that was not a bad 5 or 6 hours of effort. Now you are good to go on any trade!*