Feedback on fractions practice test

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Grade 7 Mathematics
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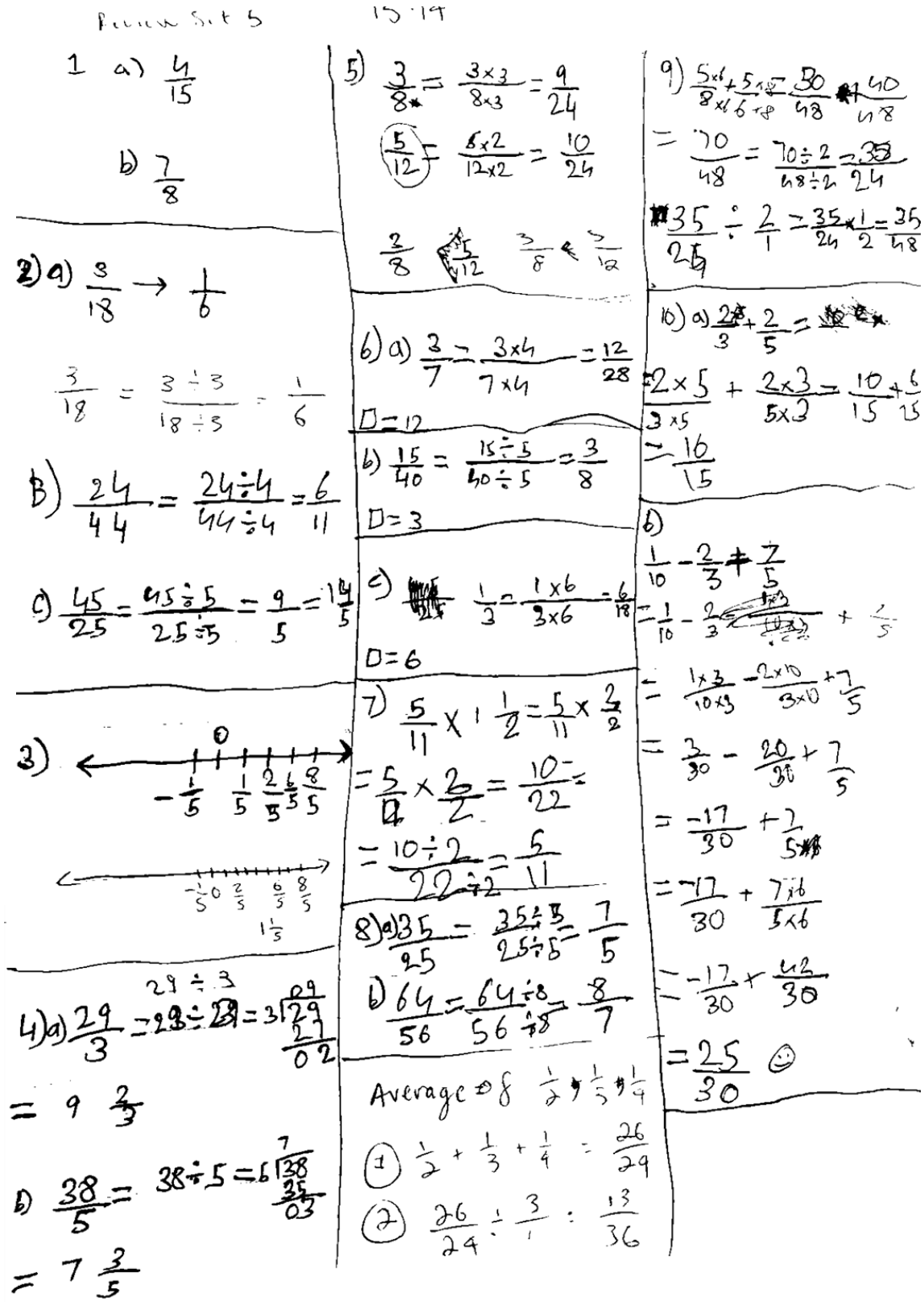

Review Set 5
15·19
1 a) 4/15
b) 7/8
2) a) 3/18 → 1/6
3/18 = 3÷3/18÷3 = 1/6
B) 24/44 = 24÷4/44÷4 = 6/11
c) 45/25 = 45÷5/25÷5 = 9/5 = 1 4/5
3)
4) a) 29/3 = 29÷3 = 3 2/3
= 9 2/3
b) 38/5 = 38÷5 = 7 3/5
5) 3/8 = 3×3/8×3 = 9/24
5/12 = 5×2/12×2 = 10/24
2/8 3/8 < 5/12
6) a) 3/7 = 3×4/7×4 = 12/28
□ = 12
b) 15/40 = 15÷5/40÷5 = 3/8
□ = 3
c) 1/3 = 1×6/3×6 = 6/18
□ = 6
7) 5/11 × 1 1/2 = 5/11 × 3/2
= 5/11 × 3/2 = 10÷/22 =
= 10÷2/22÷2 = 5/11
8) a) 35/25 = 35÷5/25÷5 = 7/5
b) 64/56 = 64÷8/56÷8 = 8/7
Average of 1/2 1/3 1/4
(1) 1/2 + 1/3 + 1/4 = 26/24
(2) 26/24 ÷ 3/1 = 13/36
9) 5×6/8×6 + 5×8/6×8 = 30/48 + 40/48
= 70/48 = 70÷2/48÷2 = 35/24
35/25 ÷ 2/1 = 35/24 × 1/2 = 35/48
10) a) 2/3 + 2/5 =
2×5/3×5 + 2×3/5×3 = 10/15 + 6/15
= 16/15
b)
1/10 - 2/3 + 7/5
= 1/10 - 2/3 + 7/5
= 1×3/10×3 - 2×10/3×10 + 7/5
= 3/30 - 20/30 + 7/5
= -17/30 + 7/5
= -17/30 + 7×6/5×6
= -17/30 + 42/30
= 25/30

+ 51 min

10) c) $3\frac{3}{5} \div 2\frac{3}{4}$

$= \frac{3}{5} \div \frac{11}{4}$

$= \frac{3}{5} \times \frac{4}{11}$

$= \frac{12}{55}$

d) $1\frac{3}{4} \times 2$

$= \frac{7}{4} \times \frac{2}{1}$

$= \frac{14}{4}$

$= \frac{14 \div 2}{4 \div 2} = \frac{7}{2}$

11) a) $\frac{2 \times 3 + 14}{5 \times 8}$

$= \frac{20}{40}$

$= \frac{2}{4}$

$= 0.5$

b) $\frac{3}{1} + \frac{7-2}{5}$

$= \frac{3}{1} + \frac{7-2}{5}$

$= \frac{3}{1} + \frac{5}{5}$

$= \frac{3+1}{4}$

12) $\frac{3}{8} = \frac{?}{24}$

$= \frac{3 \times 3}{8 \times 3} = \frac{9}{24}$

$= \frac{9}{24} = \frac{?}{24}$

$= ? = 9$

9 students brought lunch to School out of 24 students

13) $\frac{1}{1} - \left(\frac{1}{5} + \frac{1}{4} + \frac{1}{8}\right)$

$= \frac{1}{1} - \left(\frac{1 \times 4}{5 \times 4} + \frac{1 \times 5}{4 \times 5} + \frac{1}{8}\right)$

$= \frac{1}{1} - \left(\frac{4}{20} + \frac{5}{20} + \frac{1}{8}\right)$

$= \frac{1}{1} - \left(\frac{9}{20} + \frac{1}{8}\right)$

$= \frac{1}{1} - \left(\frac{9 \times 8}{20 \times 8} + \frac{1 \times 20}{8 \times 20}\right)$

$= \frac{1}{1} - \left(\frac{72}{160} + \frac{20}{160}\right)$

$= \frac{1}{1} - \left(\frac{92}{16}\right)$

$= \frac{1 \times 16}{1 \times 16} - \frac{92 \times 1}{16 \times 1}$

$= \frac{16}{16} - \frac{92}{16}$

$= \frac{-76}{16}$

Feedback

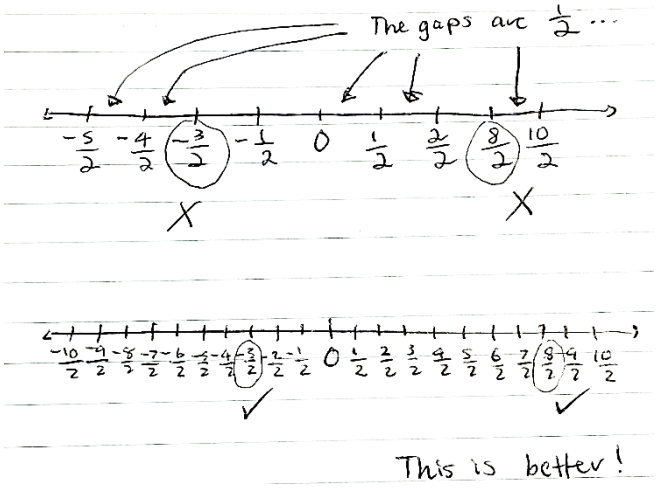
1. We should ensure that we always show *how* we reached our final answer:

   Simplify $\frac{15}{40}$

   $$\frac{15}{40} = \frac{15 \div 5}{40 \div 5} = \frac{3}{8}$$

   This step is most important!

2. When constructing a fraction number line, we must keep the spacing *consistent*:



3. We must not forget that we can rewrite fractions as a division. This might help us answer certain questions!

   If the race is 10km, and Tim has completed 5km, what percentage of the race has he completed?

   $$\frac{5\ km}{10\ km} = 5 \div 10 = 0.5 = (0.5 \times 100)\% = 50\%$$

4. If a question asks us to *compare* two fractions which have *different denominators*, we will *almost always* need to convert them to their LCD:

$$\frac{?}{42} = \frac{1}{7}$$

$$\frac{?\div 6}{42 \div 6} = \frac{1}{7}$$

$$\frac{?\div 6}{7} = \frac{1}{7}$$

$$?\div 6 = 1$$

$$? = 6$$

5. If a question asks us to find the *average* of a set of numbers, we need to:

    1. Add all of those numbers together
    2. Divide the answer by how many numbers there are
    3. Write our answer in *sentence form*

    Find the average of $4, 5, and\ 6$

$$4 + 5 + 6 = 15\ \{add\ all\ numbers\ together\}$$

$$\frac{15}{3} = 5\ \{divide\ the\ result\ by\ how\ many\ numbers\ there\ are\}$$

$$The\ average\ of\ 4{,}5\ and\ 6\ is\ 5.\{answer\ in\ sentence\ form\}$$

Find the average of $\frac{1}{5}$, $\frac{4}{35}$ and $\frac{1}{7}$

Add all fractions together:

$$\frac{1}{5}+\frac{4}{6}+\frac{1}{7} = \frac{1\times 7}{5\times 7}+\frac{4}{35}+\frac{1\times 5}{7\times 5}$$

$$= \frac{7}{35}+\frac{4}{35}+\frac{5}{35}$$

$$= \frac{16}{35}$$

Divide by how many fractions there are:

$$\frac{16}{35}\div 3 = \frac{16}{35}\div\frac{3}{1}$$

$$= \frac{16}{35}\times\frac{1}{3}$$

$$= \frac{16}{105}$$

Write your answer in sentence form:

The average of $\frac{1}{5}$, $\frac{4}{35}$ and $\frac{1}{7}$ is $\frac{16}{105}$.

6. We start each problem by rewriting the question, and we *begin a new line* every time we make a calculation:

$$1+\frac{4}{3}-\left(\frac{2}{5}\div\frac{3}{4}\right)=\frac{1}{1}+\frac{4}{3}-\left(\frac{2}{5}\div\frac{3}{4}\right)$$

$$=\frac{1}{1}+\frac{4}{3}-\left(\frac{2}{5}\times\frac{4}{3}\right)$$

$$=\frac{1}{1}+\frac{4}{3}-\frac{8}{15}$$

$$=\frac{1\times 15}{1\times 15}+\frac{4\times 5}{3\times 5}-\frac{8}{15}$$

$$=\frac{15}{15}+\frac{20}{15}-\frac{8}{15}$$

$$=\frac{35}{15}-\frac{8}{15}$$

$$=\frac{27}{15}$$

Can you identify the calculation made on each line?

7. Remember, fractions can also be negative!

$$\frac{5}{14} - \frac{17}{14} = -\frac{12}{14}$$

8. To find the LCD, we don't always need to convert both fractions:

$$\frac{5}{10} + \frac{2}{5} = \frac{5 \times 5}{10 \times 5} + \frac{2 \times 10}{5 \times 10} = \frac{25}{50} + \frac{20}{50} = \frac{45}{50}$$

Sometimes, can just convert one fraction:

$$\frac{5}{10} + \frac{2}{5} = \frac{5}{10} + \frac{2 \times 2}{5 \times 2}$$
$$= \frac{5}{10} + \frac{4}{10}$$
$$= \frac{9}{10}$$

And this gets us to lowest terms quicker too!

9. When we are adding or subtracting fractions, sometimes we should *rearrange* them to make the problem easier to think about:

$$-\frac{5}{14}+\frac{17}{14}=\frac{17}{14}-\frac{5}{14}$$

This works because we have not changed the *signs* of any of our fractions, we have just moved them around:

$$-1+2=+2-1=2-1=1$$

10. We can cancel zeroes on fractions:

$$\frac{2\cancel{0}}{15\cancel{0}}=\frac{2}{15}$$

This works because the fraction will still have the same *value* when we do this:

$$\frac{20}{150}=20\div 150\approx 0.133$$

$$\frac{2}{15}=2\div 15\approx 0.133$$

11. The *value* of a fraction is the numerator divided by the denominator, and will be either a whole number or a decimal:

$$\frac{1}{2} = 1 \div 2 = 0.5 \ \{the\ value\ of \frac{1}{2}\ is\ 0.5\}$$

Or

$$\frac{3}{1} = 3 \div 1 = 3 \ \{the\ value\ of \frac{3}{1}\ \ is\ 3\}$$

12. Any number divided by itself is equal to 1:

$$\frac{1}{1} = 1 \div 1 = 1$$

$$\frac{16}{16} = 16 \div 16 = 1$$

$$\frac{256}{256} = 256 \div 256 = 1$$

Because $\frac{256}{256}$ means: $how\ many\ times\ does\ 256\ fit\ into\ 256?$ Just once! And the same for every other number.

13. $0 \div$ anything $= 0$:

$$\frac{0}{15} = 0 \div 15$$

Because we read a fraction $\frac{a}{b}$ as $a\ parts\ out\ of\ b$. But if our fraction is $\frac{0}{15}$, that means $zero\ parts\ out\ of\ fifteen$, which is just 0.

14. For worded questions, such as:

Four friends, Jenny, Terry, Lana, and Fitzroy took a maths test.
Jenny scored $\frac{15}{30}$, Terry scored $\frac{14}{30}$, Lana scored $\frac{21}{30}$, and Fitzroy scored $\frac{29}{30}$.
What was the average score out of 30 amongst the four friends?

We first do our calculations, making sure that they are neat and start a new line for every new calculation:

$$\text{Average score} = (15 + 14 + 21 + 29) \div 4$$

$$= 69 \div 4$$

$$= 4\overline{)69} \quad 17 + \frac{1}{4}$$

$$= 17 + (1 \div 4)$$

$$= 17 + 0.25$$

$$= 17.25$$

Then, we write our final answer in sentence form:

The average score out of 30 *amongst Jenny, Terry, Lana, and Fitzroy was* $\frac{17.25}{30}$.