

I checked my predictions with a calculator.

$$a) \frac{2}{10} = 0.2$$

$$c) \frac{8}{42} = 0.190\overline{476}$$

$$b) \frac{7}{9} = 0.\overline{7}$$

$$d) \frac{53}{80} = 0.6625$$

$0.190\overline{476}$, 0.2 , 0.6625 , $0.\overline{7}$

$\frac{8}{42}$, $\frac{2}{10}$, $\frac{53}{80}$, $\frac{7}{9}$

I was right!

I ordered the decimals from least to greatest.

Then I ordered the fractions from least to greatest.

A Checking

1. Write each repeating decimal in bar notation.

a) $0.555\ 555\ 555 \dots$

b) $0.134\ 561\ 345\ 613\ 456 \dots$

2. Compare each pair of fractions using equivalent decimals.

Replace each \square with $>$, $<$, or $=$.

a) $\frac{5}{16} \square \frac{2}{9}$

b) $\frac{7}{11} \square \frac{5}{8}$

c) $\frac{17}{20} \square \frac{11}{14}$

B Practising

3. Decide whether the decimal equivalent of each fraction terminates or repeats.

- a) $\frac{3}{4}$ b) $\frac{5}{9}$ c) $\frac{9}{14}$ d) $\frac{19}{20}$

4. Write each decimal as a fraction.

- a) 0.1625 b) 0.8550

5. If possible, write each fraction as a terminating decimal.

- a) $\frac{14}{25}$ c) $\frac{1}{16}$ e) $\frac{19}{20}$
b) $\frac{5}{8}$ d) $\frac{4}{5}$ f) $\frac{22}{32}$

6. If possible, write each fraction as a repeating decimal.

- a) $\frac{1}{6}$ c) $\frac{7}{11}$ e) $\frac{48}{49}$
b) $\frac{8}{9}$ d) $\frac{7}{15}$ f) $\frac{57}{111}$

7. Sort the fractions based on whether they are equivalent to a terminating decimal or a repeating decimal.

- a) $\frac{4}{9}$ c) $\frac{5}{6}$ e) $\frac{5}{18}$
b) $\frac{3}{5}$ d) $\frac{15}{16}$ f) $\frac{19}{32}$

8. Order the fractions in question 7 from least to greatest.

9. a) Describe the following fraction pattern: $\frac{8}{9}, \frac{8}{99}, \frac{8}{999}, \dots$

Write the next three fractions in the pattern.

b) Rewrite the pattern using decimal equivalents for each of the six fractions.

c) Describe the decimal pattern. Is the decimal pattern easier or harder to describe than the fraction pattern?

10. Express each fraction as a repeating decimal.

- a) $\frac{1}{7}$ b) $\frac{2}{7}$ c) $\frac{3}{7}$

11. a) Describe a pattern in your answers for the previous question.

b) Predict the decimal equivalents of $\frac{4}{7}$ and $\frac{5}{7}$.

12. Replace each \blacksquare with $>$, $<$, or $=$.

a) $0.2 \blacksquare 0.\overline{2}$ d) $\frac{6}{11} \blacksquare \frac{7}{13}$

b) $\frac{45}{99} \blacksquare 0.4\overline{5}$ e) $0.357\ 357\ 357 \dots \blacksquare 0.\overline{375}$

c) $0.8\overline{2} \blacksquare \frac{4}{5}$ f) $\frac{2}{3} \blacksquare 0.633$

13. Order the numbers from least to greatest.

a) $\frac{1}{8}, \frac{5}{7}, 0.3\overline{5}, 0.\overline{39}, \frac{9}{10}$ b) $0.5\overline{6}, 0.5\overline{6}, 0.5\overline{6}, \frac{5}{9}, \frac{27}{50}$

14. Predict the decimal equivalent of each fraction, using the fact that $\frac{1}{3} = 0.333\dots$

a) $\frac{2}{3}$ b) $\frac{1}{9}$ c) $\frac{1}{30}$ d) $\frac{4}{3}$

15. Calculate the decimal equivalent of each fraction.

a) $\frac{1}{12}$ b) $\frac{1}{28}$ c) $\frac{1}{44}$ d) $\frac{1}{52}$

16. Look at your answers for the previous question.

a) How are the decimal equivalents alike?

b) What do the denominators have in common?

17. The cost of a new toy is \$1 after taxes. You and two friends want to split the cost evenly.

a) Express each person's share as a fraction.

b) Express the fraction as a decimal.

c) How much should each of you pay? Explain your decision.

d) Create a similar problem with a different fraction and solve it.

18. How can you tell, without calculating, that the decimal equivalent of $\frac{1}{33}$ repeats?

$$0.\overline{01} \times 24 = 0.\overline{24}$$

Max's Solution

I know that $\frac{1}{99} = 0.\overline{01}$, so $\frac{24}{99}$ is 24 times as much.
I multiplied each $0.\overline{01}$ part by 24.

A Checking

- Write each decimal as a fraction.
 - 0.162
 - 0.0777...
 - 0.272 727...
- Write each decimal as a fraction. Then replace each \blacksquare with $<$, $>$, or $=$.
 - $0.375 \blacksquare \frac{1}{4}$
 - $0.23 \blacksquare \frac{1}{7}$
 - $0.844 \blacksquare \frac{22}{25}$

B Practising

- Write each decimal as a fraction.
 - $0.\overline{14}$
 - $0.\overline{273}$
 - 0.0777...
 - $4.\overline{17}$
 - 0.272 727...
 - 0.767
- Replace each \blacksquare with $<$, $>$, or $=$.
 - $0.416 \blacksquare \frac{1}{4}$
 - $0.52 \blacksquare \frac{1}{2}$
 - $0.\overline{6} \blacksquare \frac{2}{3}$
 - $0.6 \blacksquare \frac{2}{3}$
- Match each fraction with its decimal equivalent.

A. $\frac{4}{7}$	B. $\frac{7}{13}$	C. $\frac{6}{11}$	D. $\frac{2}{21}$
a) 0.54	b) 0.095 238	c) 0.571 428	d) 0.538 461
- Explain how you know, without using a calculator, that $0.\overline{45}$ is greater than $\frac{9}{20}$.
- Describe how to write a terminating decimal as a fraction. Give an example.

The goal of this game is to get the greatest possible number of payers.

How to Play

- One player starts with 10 cards.
- Players use their cards to make a decimal.
- Players then multiply their decimal by 100. The player with the greatest product wins.
- The game continues for a set number of rounds.



My cards were 7, 9, 1, 0, 0, 0, 0, 0, 0, 0. I could multiply 0.49 by 100. The answer is 49. Or, I could multiply 0.09 by 100. The answer is 9. I'll choose the second option because this gives me more points.