7. [Decimals / Fractions / Percentages]

Skill 7.1 Ordering decimal numbers.

- Line up the decimal numbers at their decimal points.
- Compare digits in the same places, starting from the left, until you find the smallest digit.
  Hint: The number with the smallest digit will be the smallest number.
- Look for the second smallest number.
- Continue in this way until you find the largest number.

Q. Place in order from smallest to largest:
0.325, 0.025, 0.035, 0.235

	U	.	T	H	Th
			units	tenths	hundredths	thousandths
(largest) 4th	0	.	3	2	5
(smallest) 1st	0	.	0	2	5
2nd	0	.	0	3	5
3rd	0	.	2	3	5

A. ***0.025, 0.035, 0.235, 0.325***

Find the smallest digits.
Work from left to right.

Units: all 0

Tenths: 0 < 2 < 3
either 0.025 or 0.035 is the smallest

Hundredths: 2 < 3
so 0.025 is the smallest and 0.035 is 2nd smallest

Tenths: 2 < 3
so 0.235 is 3rd smallest
0.325 is the largest

a) Place in order from smallest to largest:
0.606, 0.66, 0.066, 0.06

U	.	*T*	*H*	*Th*
0	.	*6*	*0*	*6*
0	.	*6*	*6*	
0	.	*0*	*6*	*6*
0	.	*0*	*6*	

the smallest number

b) Place in order from largest to smallest:
3.041, 3.04, 3.104, 3.014

U	.	*T*	*H*	*Th*

c) Write in ascending order:
0.263, 0.236, 0.326, 0.362

d) Write in descending order:
0.052, 0.025, 0.05, 0.205

e) Write in descending order:
0.075, 0.507, 0.570, 0.057

f) Write in ascending order:
1.264, 1.064, 1.24, 1.246

g) Write in ascending order:
0.617, 0.706, 0.076, 0.176

h) Write in descending order:
3.28, 3.892, 3.298, 3.928

Skill 7.2 Ordering fractions.

- Find the lowest common denominator of the fractions, which is the Lowest Common Multiple (LCM) of the denominators.
- Change the fractions to equivalent fractions with the lowest common denominator.
- Arrange the fractions in order of the numerators (the smallest fraction has the smallest numerator and so on).

smallest numerator = smallest fraction

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

same denominator

Hints: If unsure which is the LCM of the denominators, use their product as the common denominator.
When the smaller denominators divide evenly into the biggest denominator, this biggest number becomes the common denominator.

Q. Place in ascending order:

$\frac{4}{5}, \frac{21}{25}, \frac{83}{100}$

A. $\boldsymbol{\frac{4}{5}, \frac{83}{100}, \frac{21}{25}}$

$\frac{4}{5}, \frac{21}{25}, \frac{83}{100}$ — *LCM of 5, 25 and 100 is 100*

$\frac{4}{5} \overset{\times 20}{=} \frac{80}{100}$ — because $100 \div 5 = 20$, $4 \times 20 = 80$

$\frac{21}{25} \overset{\times 4}{=} \frac{84}{100}$ — because $100 \div 25 = 4$, $21 \times 4 = 84$

$\frac{83}{100} = \frac{83}{100}$

$80 < 83 < 84$, so $\frac{80}{100} < \frac{83}{100} < \frac{84}{100}$ or $\boldsymbol{\frac{4}{5} < \frac{83}{100} < \frac{21}{25}}$

a) Place in ascending order:

$\frac{2}{3}, \frac{5}{6}, \frac{13}{18}$ — *LCM of 3, 6 and 18 is 18*

$\frac{2}{3} \overset{\times 6}{=} \frac{12}{18}$ $\quad \frac{5}{6} \overset{\times 3}{=} \frac{15}{18}$ $\quad \frac{13}{18}$

$\frac{12}{18} < \frac{13}{18} < \frac{15}{18}$

$\frac{2}{3}, \frac{13}{18}, \frac{5}{6}$

b) Place in descending order:

$\frac{21}{50}, \frac{2}{5}, \frac{43}{100}$

.....

.....

c) Place in ascending order:

$\frac{3}{4}, \frac{7}{9}, \frac{23}{36}$

.....

.....

d) Place in descending order:

$\frac{7}{10}, \frac{31}{50}, \frac{71}{100}$

.....

.....

e) Place in ascending order:

$\frac{13}{40}, \frac{3}{8}, \frac{1}{4}$

.....

.....

f) Place in descending order:

$\frac{7}{18}, \frac{29}{54}, \frac{4}{9}$

.....

.....

Skill 7.3 Finding equivalent fractions.

- Check if you need to multiply or divide the numerator or denominator of the first fraction to reach the numerator or denominator of the second fraction.
- Do the same operation to the top and bottom of the fraction.

Example: $\frac{2}{3} = \frac{?}{18} \Rightarrow \frac{2}{3}\overset{\times 6}{} = \frac{12}{18}$ (×6) So $\frac{2}{3}$ and $\frac{12}{18}$ are equivalent fractions.

- Multiply or divide the numerator and denominator of the first fraction by the same number until you reach the second fraction.

Q. Complete the equivalent fractions:

$\frac{30}{180} = \frac{\square}{18} = \frac{1}{\square}$

A. $\frac{30}{180} = \frac{?}{18} \Rightarrow \frac{30}{180}\overset{\div 10}{} = \frac{3}{18}$ (÷10)

and $\frac{30}{180} = \frac{1}{?} \Rightarrow \frac{30}{180}\overset{\div 30}{} = \frac{1}{6}$ (÷30)

$\Rightarrow \frac{30}{180} = \frac{3}{18} = \frac{1}{6}$

a) Complete the equivalent fractions:

$\frac{5}{6} = \frac{15}{18}$

$\frac{5}{6} = \frac{15}{?} \Rightarrow \frac{5}{6}\overset{\times 3}{} = \frac{15}{18}$ (×3)

b) Complete the equivalent fractions:

$\frac{5}{8} = \frac{\square}{200}$

c) Complete the equivalent fractions:

$\frac{85}{100} = \frac{17}{\square}$

d) Complete the equivalent fractions:

$\frac{3}{4} = \frac{\square}{20} = \frac{75}{\square}$

e) Complete the equivalent fractions:

$\frac{64}{144} = \frac{16}{\square} = \frac{\square}{9}$

f) Complete the equivalent fractions:

$\frac{20}{70} = \frac{10}{\square} = \frac{\square}{7}$

g) Complete the equivalent fractions:

$\frac{2}{5} = \frac{10}{\square} = \frac{\square}{75}$

h) Complete the equivalent fractions:

$\frac{50}{80} = \frac{\square}{40} = \frac{5}{\square}$

i) Complete the equivalent fractions:

$\frac{4}{9} = \frac{12}{\square} = \frac{\square}{81}$

j) $\frac{11 \times 10}{12 \times 10} = \frac{11}{12}$

True or false? true

$\frac{11 \times 10}{12 \times 10} = \frac{11\not{0}}{12\not{0}} = \frac{11}{12}$ (Simplify: Divide by 10)

k) $\frac{4+8}{5+8} = \frac{4}{5}$

True or false?

l) $\frac{100-6}{200-6} = \frac{1}{2}$

True or false?

Skill 7.4 Writing a decimal number as a percentage.

- Multiply the decimal number by 100, by moving the decimal point two places to the right.
- Add the percentage sign.

Hint: Zeros can be added at the end of any decimal number: 0.4 = 0.4000

Q. Write 0.125 as a percentage.

A. $0.125 = 0.125 \times 100\%$ (2 zeros, 2 places to the right)
$= \mathbf{12.5\%}$

a) Write 0.03 as a percentage.

$0.03 = 0.03 \times 100\%$ = 3%

b) Write 0.2 as a percentage.

$0.2 =$ =

c) Write 0.35 as a percentage.

= =

d) Write 0.88 as a percentage.

= =

e) Write 0.08 as a percentage.

= =

f) Write 0.1 as a percentage.

= =

g) Write 0.02 as a percentage.

= =

h) Write 0.4 as a percentage.

= =

i) Write 0.463 as a percentage.

= =

j) Write 0.055 as a percentage.

= =

k) Write 0.015 as a percentage.

= =

l) Write 0.071 as a percentage.

= =

m) Write 1.2 as a percentage.

= =

n) Write 2.5 as a percentage.

= =

o) Write 2.3 as a percentage.

= =

p) Write 3.1 as a percentage.

= =

q) Write 0.343 as a percentage.

= =

r) Write 0.214 as a percentage.

= =

Skill 7.5 Writing a percentage as a decimal number.

- Write the percentage as a fraction out of 100.
- Divide the numerator of the fraction by 100, by moving the decimal point two places to the left.

Hint: Fractions are just divisions.

There is a decimal point and zeros which are not written, at the end of any whole number: 27 = 27.00

Zeros can also be added before the number: 27 = 027.00

Q. Write 2.45% as a decimal number.

A. $2.45\% = \frac{2.45}{100}$

$= 2.45 \div 100$

$= \overset{\frown}{00}2.45 \div 100$ (2 zeros, 2 places to the left)

$= \mathbf{0.0245}$

a) Write 9% as a decimal number.

$9\% = \frac{9}{100} = \overset{\frown}{00}9.0 \div 100 =$ 0.09

b) Write 4% as a decimal number.

$4\% =$ ..... $=$ ..... $=$ .....

c) Write 70% as a decimal number.

..... $=$ ..... $=$ .....

d) Write 86% as a decimal number..

..... $=$ ..... $=$ .....

e) Write 40% as a decimal number.

..... $=$ ..... $=$ .....

f) Write 63% as a decimal number.

..... $=$ ..... $=$ .....

g) Write 2.5% as a decimal number.

..... $=$ ..... $=$ .....

h) Write 4.15% as a decimal number.

..... $=$ ..... $=$ .....

i) Write 11.5% as a decimal number.

..... $=$ ..... $=$ .....

j) Write 3.25% as a decimal number.

..... $=$ ..... $=$ .....

k) Income tax is 15% for an income between $6001 and $21 600. Write the percentage as a decimal.

..... $=$ ..... $=$ .....

l) Approximately 60% of the waste at the tip is household waste. Write this as a decimal.

..... $=$ ..... $=$ .....

m) The interest rate of a major credit card is 17.5%. Write this as a decimal.

..... $=$ ..... $=$ .....

n) Maximum legal blood alcohol concentration for drivers in NSW is 0.05%. What is this as a decimal?

..... $=$ ..... $=$ .....

Skill 7.6 Writing a decimal number as a fraction in simplest form.

- Write the decimal number as the numerator of the fraction.
- Ignore any zeros at the start of the number.
- Use the place value of the last digit of the decimal number to determine the size of the denominator.

Example:

units	tenths	hundredths
0 .	0	8

= 8 hundredths = $\frac{8}{100}$

Write the 8 as the numerator

8 in hundredths place, denominator = 100

- Write the fraction in simplest form. Divide both the numerator and the denominator by the same number.

Example: $\frac{8}{100} \overset{\div 4}{=} \frac{2}{25}$

Hint: For the denominator, write 1 followed by one zero for each digit after the decimal point.

Example: $0.\underline{08} = \frac{8}{\underline{100}}$

Q. Write 0.92 as a fraction in simplest form.

A. $0.\underline{92} = \frac{92}{\underline{100}}$

Write the 92 as the numerator

2 zeros for 2 decimal places

Simplify: ÷ 4

$= \frac{92}{100} \overset{\div 4}{=} \frac{\mathbf{23}}{\mathbf{25}}$

a) Write 0.6 as a fraction in simplest form.

$0.6 = \frac{6}{10} \overset{\div 2}{=} \frac{3}{5}$ *Simplify: ÷ 2*

b) Write 0.02 as a fraction in simplest form.

$0.02 =$ .....

c) Write 0.12 as a fraction in simplest form.

$0.12 =$ .....

d) Write 0.05 as a fraction in simplest form.

$=$ .....

e) Write 0.45 as a fraction in simplest form.

.....

f) Write 0.8 as a fraction in simplest form.

.....

g) Write 0.2 as a fraction in simplest form.

.....

h) Write 0.68 as a fraction in simplest form.

.....

i) Write 0.84 as a fraction in simplest form.

.....

j) Write 0.04 as a fraction in simplest form.

.....

Skill 7.7 Writing a fraction as a terminating decimal.

When the denominator **is** a power of 10:

- Divide the numerator by the power of 10 by moving the decimal point to the left.

Example: $\frac{27}{100} = 27 \div 100$
$= 027.0 \div 100$ (2 zeros, 2 places to the left)
$= 0.27$

Hints: Fractions are just divisions.
There is a decimal point and zeros which are not written, at the end of any whole number: 27 = 27.00
Zeros can also be added before the number: 27 = 027.0
The number of zeros in the denominator shows the number of digits after the decimal point.

$\frac{27}{100} = 0.27$

When the denominator **is not** a power of 10:

EITHER

- Multiply both the numerator and denominator by the same number to make the denominator a power of 10. (e.g. 10, 100 or 1000).

Example: $\frac{1}{4} = \frac{1}{4}\,{}^{\times 25}_{\times 25} = \frac{25}{100} = 0.25$ (power of 10)

OR

- Divide the numerator by the denominator.

Example: $\frac{1}{4} = 1 \div 4 = 1.00 \div 4 = 0.25$

$$4\overline{)1.00} = 0.25$$

Hint: Fractions are just divisions.

Q. Write $\frac{2}{5}$ as a decimal.

A. $\frac{2}{5} = \frac{2}{5}\,{}^{\times 20}_{\times 20}$ (because $100 \div 5 = 20$, $\times 20 = 40$)
(Make denominator a power of 10)
$= \frac{40}{100}$
$= 40 \div 100$
$= 040.0 \div 100$ (2 zeros, 2 places to the left)
$= 0.40$
$= \mathbf{0.4}$

OR

A. $\frac{2}{5} = 2 \div 5$
$= 2.0 \div 5$
$= \mathbf{0.4}$

$$5\overline{)2.0} = 0.4$$

a) Write $\frac{3}{50}$ as a decimal.

$= \frac{3}{50}\,{}^{\times 2}_{\times 2} = \frac{6}{100}$

$= 006.0 \div 100 =$ 0.06

b) Write $\frac{9}{20}$ as a decimal.

= = = =

c) Write $\frac{1}{2}$ as a decimal.

= = = =

d) Write $\frac{17}{50}$ as a decimal.

= = = =

e) Write $\frac{14}{25}$ as a decimal.

= = = =

f) Write $\frac{3}{4}$ as a decimal.

= = = =

g) Write $\frac{4}{5}$ as a decimal.

= = = =

h) Write $\frac{11}{25}$ as a decimal.

= = = =

i) Write $\frac{11}{20}$ as a decimal.

= = = =

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Skill 7.8 Writing a percentage as a fraction in simplest form.

- Write the percentage as a fraction with the denominator of 100.
- Simplify the fraction by dividing both the numerator and the denominator by the same number.

Hints: Percent means "per hundred" or "out of a hundred".
A percentage is another way of writing a fraction out of one hundred.
Example: 75% is said "75 percent" and means 75 out of 100.

Q. Write 8% as a fraction in simplest form.

A. $8\% = \frac{8}{100} \overset{\div 4}{\underset{\div 4}{}}$ *Simplify: ÷ 4*

$= \frac{2}{25}$

a) Write 36% as a fraction in simplest form.

$36\% = \frac{36}{100} \overset{\div 4}{\underset{\div 4}{}}$ *Simplify: ÷ 4* $= \frac{9}{25}$

b) Write 6% as a fraction in simplest form.

$6\% =$ .....

c) Write 75% as a fraction in simplest form.

.....

d) Write 30% as a fraction in simplest form.

.....

e) Write 18% as a fraction in simplest form.

.....

f) Write 90% as a fraction in simplest form.

.....

g) Write 25% as a fraction in simplest form.

.....

h) Write 44% as a fraction in simplest form.

.....

i) Write 40% as a fraction in simplest form.

.....

j) Write 56% as a fraction in simplest form.

.....

k) If Australia's Gross National Product grew 4% quarterly in 2006, what would the percentage be if written as a fraction in simplest form?

.....

l) A 2010 survey found that 74% of teenagers owned an MP3 player or an iPod. Write this percentage as a fraction in simplest form.

.....

m) If 26% of women have obtained a bachelor degree, what would the percentage be if written as a fraction in simplest form?

.....

n) A 2011 survey found that 35% of people give to charity once a month. Write this percentage as a fraction in simplest form.

.....

Skill 7.9 Writing a fraction as a percentage.

$$\frac{\text{Number}}{100} = \text{Number }\%$$

$$\text{Fraction} \times \frac{100}{1}\% = \text{Percentage}$$

EITHER

- Find the equivalent fraction which has a denominator of 100.
- The numerator of this fraction becomes the equivalent percentage.

Example: $\frac{3}{10} \overset{\times 10}{} = \frac{30}{100} = 30\%$

OR

- Multiply the fraction by $\frac{100}{1}$ and include the % sign.

Example: $\frac{3}{10} = \frac{3}{1\cancel{0}} \times \frac{10\cancel{0}}{1}\%$ *Simplify: ÷ 10*

$= 30\%$

Q. What percentage is 3 out of 5?

A. $\frac{3}{5} = \frac{3}{5} \overset{\times 20}{} = \frac{60}{100} = \mathbf{60\%}$ because $100 \div 5 = 20$, $3 \times 20 = 60$

OR

A. $\frac{3}{5} = \frac{3}{\cancel{5}_{1}} \times \frac{\cancel{100}^{20}}{1}\%$ *Simplify: ÷ 5*

$= 3 \times 20\%$

$= \mathbf{60\%}$

a) Write $\frac{3}{20}$ as a percentage.

$\frac{3}{20} = \frac{3}{20} \overset{\times 5}{} = \frac{15}{100} =$ 15%

b) Write $\frac{7}{10}$ as a percentage.

$\frac{7}{10} = \quad = \quad =$

c) Write $\frac{3}{25}$ as a percentage.

$= \quad = \quad =$

d) Write $\frac{14}{70}$ as a percentage.

$= \quad = \quad =$

e) What percentage is 15 out of 150?

$= \quad = \quad =$

f) What percentage is 45 out of 50?

$\frac{45}{50} = \frac{45}{\cancel{50}_{1}} \times \frac{\cancel{100}^{2}}{1}\% = 45 \times 2\% =$

g) Ng receives $50 commission on a $1000 sale. What percentage is this?

$= \quad = \quad =$

h) In a class of 25 students, 10 play netball. What percentage is this?

$= \quad = \quad =$

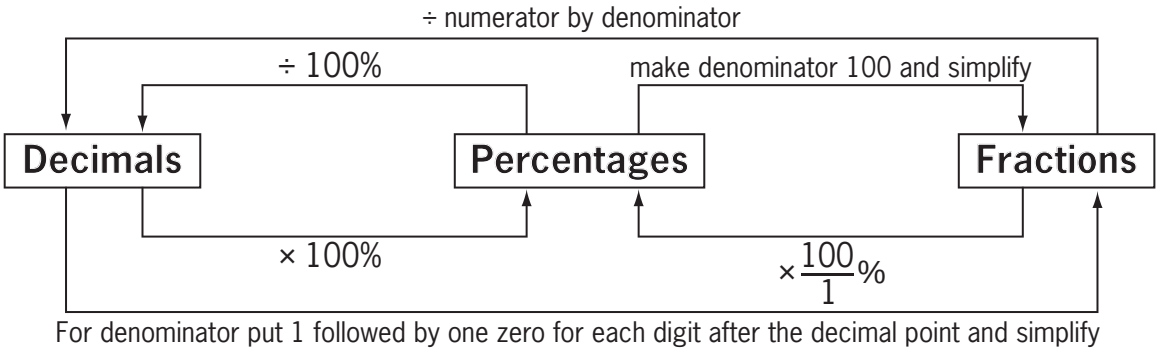
i) One quarter of the men surveyed enjoy walking as their main form of physical exercise. What percentage is this?

$= \quad = \quad =$

j) Three tenths of the women surveyed enjoy aerobics/fitness as their main form of physical exercise. What percentage is this?

$= \quad = \quad =$

Skill 7.10 Converting between decimals, fractions and percentages.



Q. Complete the table:

Decimal	Fraction	Percentage
		5%

A.

Fraction

$5\% = \frac{5}{100}^{\div 5}$ *Simplify: ÷ 5*

$= \frac{1}{20}$

Decimal

$5\% = \frac{5}{100}$

$= 5 \div 100$

$= 005.0 \div 100$ *2 zeros, 2 places to the left*

$= 0.05$

Decimal	Fraction	Percentage
0.05	$\frac{5}{100} = \frac{1}{20}$	5%

a) Complete the table:

Decimal	Fraction	Percentage
0.045		

$0.045 = \frac{45}{1000}^{\div 5}$ *Simplify: ÷ 5* $= \frac{9}{200}$

$0.045 = 0.045 \times 100\% = 4.5\%$

b) Complete the table:

Decimal	Fraction	Percentage
0.75		

c) Complete the table:

Decimal	Fraction	Percentage
	$\frac{3}{5}$	

d) Complete the table:

Decimal	Fraction	Percentage
	$\frac{9}{50}$	

Skill 7.11 Finding a fraction of a whole number.

EITHER
- Change 'of' to '×'.
- Multiply the fraction by the whole number.
(see skill 5.1, page 49)
- Cross simplify where possible before multiplying.
(see skill 5.1, page 49)

OR
- Divide the whole number by the denominator of the fraction.
- Multiply the result by the numerator of the fraction.

Example: Three fifths of 20?
First find one fifth of 20 by dividing 20 by 5:
$20 \div 5 = 4$
Then find three fifths of 20 by multiplying 4 by 3.
$4 + 4 + 4 = 4 \times 3 = 12$
So three fifths of 20 is 12.

To find $\frac{1}{2}$ of a number ⇒ ÷ 2
$\frac{1}{3}$ of a number ⇒ ÷ 3
$\frac{1}{4}$ of a number ⇒ ÷ 4
$\frac{1}{5}$ of a number ⇒ ÷ 5
$\frac{1}{6}$ of a number ⇒ ÷ 6
$\frac{1}{10}$ of a number ⇒ ÷ 10
and so on.

Q. Of the 1500 seats in the Opera Theatre at Sydney Opera House in Sydney, five sixths were occupied. How many spectators were in the Opera Theatre?

A. $\frac{5}{6}$ *of* $1500 = \frac{5}{\cancel{6}_1} \times \cancel{1500}^{250}$ (Simplify: ÷ 6)
$= \frac{5 \times 250}{1}$
$= \mathbf{1250}$

OR **A.** $1500 \div 6 = 250$ (Find $\frac{1}{6}$)
$250 \times 5 = \mathbf{1250}$ (Find $\frac{5}{6}$)

a) Find $\frac{3}{10}$ of 160.
$\frac{3}{10}$ *of* $160 = \frac{3}{\cancel{10}} \times \cancel{160}^{16} = 3 \times 16 =$ ☐ (Simplify: ÷ 10)

b) Find four sevenths of 280.
..... = ☐

c) Find $\frac{2}{9}$ of 360.
..... = ☐

d) Find five eighths of 3200.
..... = ☐

e) Of the 50 European countries, $\frac{3}{25}$ have German as their official language. How many European countries have German as their official language?
..... = ☐

f) The Western Bulldogs won four elevenths of the 22 games played in the 2013 AFL season. How many games did the Western Bulldogs win?
..... = ☐

g) Of the 36 medals won by New Zealand at the 2010 Commonwealth Games, one sixth were gold. How many gold medals did New Zealand win?
..... = ☐

h) Only one tenth of the 120 qualifiers at the *American Idol* are chosen for the finals. How many will sing in the finals?
..... = ☐

i) Two fifths of the $1200 raised at the Fireworks Frenzy were from the entry tickets. How much money was raised from the tickets?
..... = $ ☐

j) Maria paid one twentieth of $350 000 as a deposit for a house. How much did she pay up-front?
..... = $ ☐

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Skill 7.12 Comparing and ordering decimals, fractions and percentages.

- Convert the decimals, fractions and percentages to the same form, by writing all as decimals, or as fractions, or as percentages. (see skill 7.11, page 81)
- Compare and order the decimals, or the fractions, or the percentages.

Hint: The most convenient form is the decimal form. Write the fractions and percentages as decimals.

Q. Write in ascending order:
$\frac{17}{100}$, 0.7, 7%

A.

Fraction

$\frac{17}{100} = 17 \div 100$ — *Write the fraction as a decimal*

$= 0\overset{\frown}{17}.0 \div 100$ — *2 zeros, 2 places to the left*

$= \mathbf{0.17}$

Percentage

$7\% = \frac{7}{100}$ — *Write the percentage as a decimal*

$= 7 \div 100$

$= 0\overset{\frown}{07}.0 \div 100$

$= \mathbf{0.07}$

The order from smallest to largest is:

0.07, 0.17, 0.7 OR $\mathbf{7\%, \frac{17}{100}, 0.7}$

a) Which is greater?
0.09 or 90%

$90\% = \frac{90}{100} = 0\overset{\frown}{90}.0 \div 100 = 0.9$

$0.9 > 0.09$ 90%

b) Which is greater?
0.8 or 75%

c) Place in ascending order:
$\frac{1}{3}$, 0.31, 30%

Fraction: $\frac{1}{3} = 1 \div 3 = 1.0 \div 3 = 0.33.. = 0.\dot{3}$

Percentage: $30\% = \frac{30}{100} = 0\overset{\frown}{30}.0 \div 100 = 0.3$

$0.3 < 0.31 < 0.\dot{3}$

d) Place in descending order:
0.66, 6%, $\frac{6}{10}$

e) Place in ascending order:
$\frac{1}{4}$, 0.14, 41%

f) Place in descending order:
$\frac{4}{5}$, 0.83, 81%

Skill 7.13 Recognising expanded form for recurring decimals.

If the dot is above one digit
- Write the digit repeatedly.

If the dots are above two digits side by side
- Write the group of 2 digits repeatedly.

If the dots are above two digits which are not side by side
- Write the group of all the digits in between the dots repeatedly.

Q. $0.4\dot{9}\dot{5}$ is the notation for:

A) 0.4995599.....
B) 0.4959595.....
C) 0.4999555.....

A. ***B***

The dots above 95 (side by side) mean that 95 must be repeated indefinitely after 4.

a) $0.\dot{2}$ is the notation for:

A) 0.02222.....
B) 0.2222.....
C) 2.2222.....

B

b) $5.\dot{3}$ is the notation for:

A) 5.03333.....
B) 0.3333.....
C) 5.3333.....

c) $9.\dot{5}$ is the notation for:

A) 9.9955.....
B) 9.5555.....
C) 0.9595.....

d) $0.7\dot{3}$ is the notation for:

A) 0.7333.....
B) 0.737373.....
C) 0.773377.....

e) $0.2\dot{7}$ is the notation for:

A) 0.222777.....
B) 0.272727.....
C) 0.2777.....

f) $0.86\dot{1}$ is the notation for:

A) 0.86111.....
B) 0.861861.....
C) 0.868686.....

g) $0.\dot{2}\dot{3}$ is the notation for:

A) 0.222333.....
B) 0.232323.....
C) 0.2333.....

h) $0.\dot{5}\dot{4}$ is the notation for:

A) 0.55445544.....
B) 0.555444.....
C) 0.545454.....

i) $0.5\dot{9}\dot{3}$ is the notation for:

A) 0.5939393.....
B) 0.5993399.....
C) 0.593593.....

j) $0.\dot{3}76\dot{}$ is the notation for:

A) 0.3337666.....
B) 0.376376.....
C) 0.3766666.....

Skill 7.14 Writing a fraction as a recurring decimal.

- Divide the numerator by the denominator.
- Write a decimal point and zeros at the end of the numerator to complete the division.
- In the result, when a single digit is repeating after the decimal point, write the digit only once with a dot on top.
- In the result, when a pattern of digits is reapeating after the decimal point, write the pattern only once, with a dot over the first and last digit of it.

Examples:

$\frac{5}{9} = 5 \div 9 = 5.0000... \div 9 = 0.5555...$ OR $= 0.\dot{5}$

$9\overline{)5.0000}$ → 0.5555

$\frac{1}{6} = 1 \div 6 = 1.0000... \div 6 = 0.1666...$ OR $= 0.1\dot{6}$

$6\overline{)1.0000}$ → 0.1666

$\frac{3}{11} = 3 \div 11 = 3.0000... \div 11 = 0.2727...$ OR $= 0.\dot{2}\dot{7}$

$11\overline{)3.0000}$ → 0.2727

$\frac{3}{7} = 3 \div 7 = 3.0000... \div 7 = 0.428571428571...$ OR $= 0.\dot{4}28571\dot{4}$

$7\overline{)3.0000000000}$ → 0.428571428571

Q. Write $\frac{2}{9}$ as a recurring decimal.

A. $\frac{2}{9} = 2 \div 9$

$= 2.0000... \div 9$

$= 0.2222...$

$= \mathbf{0.\dot{2}}$

$9\overline{)2.0000}$ → 0.2222

a) Write $\frac{1}{11}$ as a recurring decimal.

$\frac{1}{11} = 1 \div 11 = 1.0000... \div 11 =$ 0.0̇9̇

$11\overline{)1.0000}$ → 0.0909

b) Write $\frac{4}{11}$ as a recurring decimal.

.....

$11\overline{)4.0000}$ → 0.3636

c) Write $\frac{2}{3}$ as a recurring decimal.

.....

$3\overline{)2.0000}$

d) Write $\frac{4}{9}$ as a recurring decimal.

.....

$9\overline{)4.0000}$

e) Write $\frac{11}{15}$ as a recurring decimal.

.....

$15\overline{)11.0000}$

f) Write $\frac{5}{12}$ as a recurring decimal.

.....

$12\overline{)5.0000}$

Skill 7.15 Writing a recurring decimal as a fraction.

- Convert each fraction to a decimal to find the answer. (see skill 7.14, page 84)

Q. Which fraction does $0.2\dot{6}$ equal?

A) $\frac{1}{6}$ B) $\frac{26}{100}$ C) $\frac{4}{15}$

A. *A)* $\frac{1}{6} = 1 \div 6$
$= 1.0000... \div 6$
$= 0.1666...$
$= 0.1\dot{6}$

$6\overline{)1.0000}$ → 0.1666 (4, 4, 4, 4)

B) $\frac{26}{100} = 26 \div 100 = 0.26$

C) $\frac{4}{15} = 4 \div 15$
$= 4.0000... \div 15$
$= 0.2666...$
$= 0.2\dot{6}$

$15\overline{)4.0000}$ → 0.2666 (4, 10, 10, 10)

The answer is ***C****.*

a) Which fraction is approximately equal to 0.4444?

A) $\frac{1}{4}$ B) $\frac{4}{9}$ C) $\frac{1}{2}$

$\frac{1}{4} = 1 \div 4 = 0.25$ $\frac{4}{9} = 4 \div 9 = 0.4444$

$\frac{1}{2} = 1 \div 2 = 0.5$

$9\overline{)4.0000}$ → 0.4444 (4, 4, 4, 4)

b) Which fraction does $0.\dot{5}$ equal?

A) $\frac{1}{5}$ B) $\frac{5}{10}$ C) $\frac{5}{9}$

$\frac{1}{5} = 1 \div 5 = 0.2$

$9\overline{)5.000}$ → 0.5 (5, 5)

c) Which fraction does $0.\dot{3}$ equal?

A) $\frac{3}{5}$ B) $\frac{1}{3}$ C) $\frac{3}{10}$

$3\overline{)1.0000}$

d) Which fraction does $0.0\dot{8}$ equal?

A) $\frac{8}{90}$ B) $\frac{8}{10}$ C) $\frac{8}{100}$

$90\overline{)8.0000}$

e) Which fraction does $0.\dot{2}\dot{3}$ equal?

A) $\frac{23}{10}$ B) $\frac{23}{100}$ C) $\frac{23}{99}$

f) Which fraction does $0.\dot{7}\dot{2}$ equal?

A) $\frac{72}{100}$ B) $\frac{72}{99}$ C) $\frac{72}{10}$