Practice for Mathematics Assessment - Arithmetic

Important Information about this review package

This review material has been prepared so that you can refresh your math skills prior to writing the assessment. It is not meant to teach new material. Complete what comes back to you with a bit of a review. If you run into difficulties, it's time to stop and make an appointment for your math assessment. You will be provided two options for your math assessment on the Assessment Centre website; select the option that you feel is the best fit for you. If you are unsure which assessment option to choose, contact an assessor by emailing accessassessment@camosun.ca, calling (250) 370-3945 or contact a Student Navigator at (250) 370-3466 or (250) 370-3847 and they can assist you with the decision.

Use the links provided in the review material to refresh the concepts, and for extra practice. These links connect you with Khan Academy, an established online math learning program. If you wish additional instruction, search using the link title, and you will find many other learning videos. For example, if you search for help with Place Value, you will come up with several other online learning resources to help with this topic.

Do not use a calculator. You will be required to complete the assessment without a calculator

Answers are at the end of the review.

Part 1 – Whole numbers and decimal numbers

1. Write the place value for the following number
   $364 =$ ___ groups of a hundred, ___ groups of ten, and ____ groups of one

Review Place Value

2. Insert one of the symbols, < or >, to make a true statement
   a) 11 ___ 4 b) 3.01 ___ 3.1

Review Comparing Numbers

3. Round to the nearest value as indicated.
   a) 7827 to the nearest hundred

   b) 7.827 to the nearest hundredth

Review Rounding Whole Numbers

Review Rounding Decimal Numbers

4. Calculate:

a) 7 + 8 = _____ b) 12 – 7 = _____

c) 1237
+ 374

d) 1104
- 38

Review adding and subtracting whole numbers: Adding Whole Numbers, Subtracting Whole Numbers

5. Calculate:

a) 4 × 7 = _____ b) 56 ÷ 8 = _____

c) 42
× 18

d) $93 \div 7 =$ _____

Review multiplying and dividing whole numbers: Multiplying 2-digit numbers, Dividing with remainder

6. A family can save $80 each month to buy a new TV which costs $870. How many months will it take before they can buy the TV?

7. Calculate:

a) 20.3 + 7.04 = _____ b) 18.9 – 6.42 = _____

Review adding and subtracting decimal numbers: Adding decimal numbers, Subtracting decimal numbers

c) $2.56 \times 7.4 =$ d) $46.08 \div 12.8 =$

Review multiplying and dividing decimal numbers: Multiplying decimal numbers, Dividing decimal numbers

Part 2 – Fractions, Powers, Order of Operations

Calculate. Simplify where possible.

1. a) $\frac{3}{7} + \frac{2}{7} =$ b) $\frac{3}{7} + \frac{2}{5} =$

c) $\frac{11}{12} - \frac{1}{4}$ d) $5\frac{1}{2} - 3\frac{1}{4}$

Review adding and subtracting fractions: Adding fractions, Subtracting fractions

Review writing a Mixed Number as an Improper Fraction

2. Calculate. Simplify where possible.
   a) $\frac{2}{5} \times \frac{3}{7} =$ b) $\frac{4}{15} \times \frac{60}{12} =$ c) $\frac{7}{10} \div \frac{2}{5} =$

Review multiplying and dividing fractions: Multiplying fractions, Dividing fractions

3. Jean wants to prepare 15 pizzas for a party. Each pizza will need ¾ of a cup of pizza sauce. How many cups of pizza sauce does she need? Leave your answer as a mixed number.

4. There are three options on a ballet: Liberals, NDP, and Green Party. If 1/2 of the population voted Liberal and 1/6 of the population voted Green Party, and the rest of the population voted NDP; what proportion of the population voted NDP?

5. Find the value of the following:
   a) $2^5 =$ b) $\frac{1}{3^2} =$ c) $\sqrt{49} =$

Review Simplifying Powers and Square Roots

6. Simplify the following:
   a) $5 + 3[12 - 2(5 - 3)^2] =$

   b) $24 - 3 \times 2^2 + 5 =$

Review Order of Operations

7. Estimate answers for the following:

a) $23 \times 19 =$ b) $\frac{1}{2} \times 47 =$

Review Estimating a Multiplication

Part 3: Converting between fractions, decimals, and percent

1. Write as a decimal

a) $\frac{3}{20} =$ b) $\frac{5}{8} =$

Review Converting fractions to decimals

2. Write as a simplified fraction

a) 0.125 b) 4.39

Review Converting decimals to fractions

3. a) Write as a decimal and then a fraction in simplest form

$35\% =$ $370\% =$

Review Converting from percent to decimal to fraction

4. Percent problems. Solve the following:

b) What is 10% of 420?

c) 35 is 20% of what number?

Review Solving percent problems

5. There are 9 girls and 12 boys in Ms. Taylor's class. Write a simplified ratio to represent the number of girls to boys.

Review Ratios

Answers Follow

Please contact the Faculty Leader, Assessment and Testing, at fayowskiv@camosun.ca if you wish to provide feedback or suggestions regarding the review package.

Answer Key – Arithmetic practice

Part 1 – Whole numbers and decimal numbers

1. Write the place value for the following number
   364 = 3 groups of a hundred, 6 groups of ten, and 4 groups of one

2. Insert one of the symbols, < or >, to make a true statement
   a) 11 > 4 b) 3.01 < 3.1

3. Round to the nearest value as indicated.
   a) 7827 to the nearest hundred

   7800

   b) 7.827 to the nearest hundredth

   7.83

4. Perform the operation:

   a) 7 + 8 = 15 b) 12 – 7 = 5

   c) $\overset{1\,1}{1237} + 374 = 1611$ d) $1104 - 38 = 1066$

5. Perform the operation:
   a) 4 × 7 = 28 b) 56 ÷ 7 = 7

   c) $42 \times 18 = 336 + 420 = 756$ d) 93 ÷ 7 = 13 R2

   $7\overline{)93}$, $-7\downarrow$, 23, -21, 2

6. A family can save $80 each month to buy a new TV which costs $870. How many months will it take before they can buy the TV?

   10 R70

   $80\overline{)870}$, $-80\downarrow$, 70

   The family will need to save for 11 months before they can buy the T.V.

7. Perform the operation:

a) 20.3 + 7.04 = _____

$$\begin{array}{r} 20.30 \\ +\ 7.04 \\ \hline 27.34 \end{array}$$

b) 18.9 – 6.42 = _____

$$\begin{array}{r} 18.^{8}9^{1}0 \\ -\ 6.42 \\ \hline 12.48 \end{array}$$

c) 2.56 × 7.4 =

$$\begin{array}{r} {}^{3}2.{}^{4}56 \\ \times\ 7.4 \\ \hline 1024 \\ 17920 \\ \hline 18.944 \end{array}$$

d) 46.08 ÷ 12.8 =

$$12.8\overline{)46.08} = 128\overline{)460.8}$$

$$\begin{array}{r} 3.6 \\ 128\overline{)460.8} \\ -384\downarrow \\ \hline 768 \\ -768 \\ \hline 0 \end{array}$$

Part 2 – Fractions, Powers, Order of Operations

Perform the operations:

1. a) $\frac{3}{7}+\frac{2}{7}=$ $\frac{3+2}{7}=\frac{5}{7}$

b) $\frac{3}{7}\overset{\times 5}{+}\frac{2}{5}\overset{\times 7}{=}$ $\frac{15}{35}+\frac{14}{35}$ common denom is 35

$=\frac{29}{35}$

c) $\frac{11}{12}-\frac{1}{4}\overset{\times 3}{}$

$=\frac{11}{12}-\frac{3}{12}$

$=\frac{8}{12_3}^{2}$

$=\frac{2}{3}$

d) $5\frac{1}{2}-3\frac{1}{4}$

$5+\frac{1}{2}-(3+\frac{1}{4})$

$=5+\frac{1}{2}-3-\frac{1}{4}$

$=2+\frac{1}{2}-\frac{1}{4}$

$=2+\frac{2}{4}-\frac{1}{4}$

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

or can convert to improper fractions and use a common denom

$\frac{11}{2}-\frac{13}{4}$

$=\frac{22}{4}-\frac{13}{4}$

$=\frac{9}{4}=2\frac{1}{4}$

2. Perform the operation:

a) $\frac{2}{5} \times \frac{3}{7} =$

$= \frac{2 \times 3}{5 \times 7}$

$= \frac{6}{35}$

b) $\frac{\cancel{4}^{1}}{\cancel{15}_{1}} \times \frac{\cancel{60}^{4}}{\cancel{12}_{3}} =$

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

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

c) $\frac{7}{10} \div \frac{2}{5} =$ $\frac{7}{\cancel{10}_{2}} \times \frac{\overset{1}{\cancel{5}}}{2}$

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

$= \frac{7}{4}$

3. Jean wants to prepare 15 pizzas for a party. Each pizza will need ¾ of a cup of pizza sauce. How many cups of pizza sauce does she need? Leave your answer as a simplified mixed number.

1 pizza requires $\frac{3}{4}$ c

2 pizzas require $2 \times \frac{3}{4}$ c

⋮

15 pizzas require $15 \times \frac{3}{4}$ c

$15 \times \frac{3}{4}$ c $= \frac{15 \times 3}{4}$

$= \frac{45}{4}$

$= 11\frac{1}{4}$ c

Jean needs $11\frac{1}{4}$ cups of sauce.

4. There are three options on a ballet: Liberals, NDP, and Green Party. If 1/2 of the population voted Liberal and 1/6 of the population voted Green Party, and the rest of the population voted NDP; what proportion of the population voted NDP?

$\frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$ so $\frac{2}{3}$ of the population voted Liberal or Green Party. This leaves $\frac{1}{3}$ of the population voting NDP

then $1 - \frac{2}{3} = \frac{3}{3} - \frac{2}{3} = \frac{1}{3}$

5. Find the value of the following:

a) $2^5 =$

$= 2 \times 2 \times 2 \times 2 \times 2$

$= 32$

b) $\frac{1}{3^2} =$

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

$= \frac{1}{9}$

c) $\sqrt{49} = 7$ since $7 \times 7 = 49$

6. Simplify the following:

a) $5 + 3[12 - 2(5-3)^2] = 5 + 3[12 - 2(2)^2]$

use BEDMAS or sometimes called PEMDAS

$= 5 + 3[12 - 8]$

$= 5 + 3[4]$

$= 5 + 12$

$= 17$

b) $24 - 3 \times 2^2 + 5 =$

$= 24 - 3 \times 4 + 5$

$= 24 - 12 + 5$

$= 12 + 5$

$= 17$

7. Estimate answers for the following:

a) $23 \times 19 =$

$\approx 25 \times 20$

≈ 500

b) $\frac{1}{2} \times 47 =$

$\approx \frac{1}{2} \times 50$

≈ 25

<u>Part 3: Converting between fractions, decimals, and percent</u>

1. Write as a decimal

a) $\frac{3}{20} = 3 \div 20$

$= 20\overline{)3.00}$ → 0.15

$-20\downarrow$

100

-100

0

$\frac{3}{20} = 0.15$ as a decimal

b) $\frac{5}{8} = 5 \div 8$

$= 8\overline{)5.000}$ → 0.625

$-48\downarrow$

20

$-16\downarrow$

40

-40

0

$\frac{5}{8} = 0.625$ as a decimal

2. Write as a simplified fraction

a) 0.125

$0.125 = \frac{125}{1000_8} = \frac{1}{8}$

b) 4.39

$4.39 = 4\frac{39}{100}$ (simplest form since $39 = 3 \times 13$ and neither 3, nor 13 divide 100 evenly)

3. a) Write as a decimal and then a fraction in simplest form

35% = 0.35 (decimal) $= \frac{35}{100}$ (fraction) $= \frac{7}{20}$ (simplified)

370% = 3.70 (decimal) $= 3\frac{70}{100}$ (fraction) $= 3\frac{7}{10}$ (simplified)

4. Percent problems. Solve the following:

b) What is 10% of 420? This $10\% \times 420 = \frac{1}{10_1} \times \overset{42}{\cancel{420}} = 42$

or $10\% \times 420$

$= 0.1 \times 420$

$= 42$

c) 35 is 20% of what number? Let x be the unknown number. Then

20% of $x = 35$ and $x = 175$

$\left(\frac{100}{20}\right)\frac{20}{100}x = 35\left(\frac{100}{20}\right)$

$x = \frac{35 \times \overset{5}{\cancel{100}}}{\underset{1}{\cancel{20}}}$

or $0.2x = 35$

$x = \frac{35}{0.2}$

$\frac{0.2\sqrt{35}}{} = 2\sqrt{350}$

$2\overline{)350}$ → 175, $-2\downarrow$, 15, $-14\downarrow$, 10

5. There are 9 girls and 12 boys in Ms. Taylor's class. Write a simplified ratio to represent the number of girls to boys.

$9:12 = 3:4$