

## Sample Diagnostic Test Mathematics

Calculators are NOT allowed

### INTEGERS

1. Evaluate the following (don't use a calculator for these questions):

a)  $(-4)(-5)$

b)  $(-3) \times (7)$

c)  $-9 + (-4)$

d)  $8 - (-7)$

e)  $36 \div (-4)$

f)  $-25 - (-3) + (-7)$

### ORDER OF OPERATIONS

2. Evaluate the following. Show all the steps in your thinking.

a)  $13 + 3(2) - 5$

b)  $15 \div 3 - 4^2$

c)  $26 - 4 \times 6 + 2^3$

d)  $16 \div 2 \times 8(2 + 1)$

e)  $(16 - 6)^2 \div 2$

f)  $16 - 8 \div 2 - 2(4)$

### EQUIVALENT FRACTIONS/ PROPORTIONAL REASONING

3. Find the value of x:

a)  $\frac{x}{42} = \frac{5}{6}$

b)  $\frac{3}{2} = \frac{24}{x}$

### CONVERTING FRACTIONS/DECIMALS/PERCENT

4. Fill in the blanks on the table below:

Fraction (Lowest Terms)	Decimal	Percent
$\frac{1}{4}$		
	0.06	

## WORKING WITH FRACTIONS

5. Evaluate the following. Reduce final answers to lowest terms. Changed improper answers to mixed fractions.

a)  $\frac{5}{6} + \frac{7}{9}$

b)  $7\frac{1}{2} - 5\frac{3}{4}$

c)  $-3\frac{1}{4} \div 4$

d)  $\left(\frac{-4}{5}\right)\left(-\frac{10}{3}\right)$

e) Give an example of a fraction that is greater than  $\frac{1}{2}$  but less than  $\frac{11}{16}$ . Explain your thinking.

## SUBSTITUTION

6. Evaluate if  $x = 2$  and  $y = 4$

a)  $5x + 3y$

b)  $-2(x - y)$

## ALGEBRA

7. Simplify

a)  $5x - 2x$

b)  $3x^2 + 8x^2$

## SOLVING EQUATIONS

8. Solve for  $x$ . Show your work.

a)  $3x - 6 = 12$

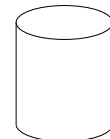
b)  $\frac{x}{5} = 12$

## MEASUREMENT/GEOMETRY

9. Find the volume  $V = \pi \times r^2 \times h$

a) diameter = 12 cm

height = 18 cm  
(Can use calculator)



**Answers:**

#1 a) 20 b) -21 c) -13 d) 15 e) -9 f) -29

#2 a) 14 b) -11 c) 10 d) 192 e) 50 f) 4

#3 a) 35 b) 16

#4 0.25 25%  $\frac{3}{50}$  6%

#5 a)  $1\frac{11}{18}$  b)  $1\frac{3}{4}$  c)  $\frac{-13}{16}$  d)  $2\frac{2}{3}$

e) Answers will vary. Convert both fractions to equivalent fractions with a common denominator for easier comparison.

#6 a) 24 b) 4

#7 a)  $3x$  b)  $11x^2$

#8 a)  $x=6$  b)  $x=60$

#9 a)  $2035.75\text{cm}^3$

By the end of grade 8, students should:

- be able to confidently answer at least 70% of the above questions without the use of a calculator
- know the multiplication table up to 12 x 12 from memory