URSULA FRANKLIN ACADEMY

GRADE 9 MATHEMATICS

PREPARATION RESOURCES

***NAME OF STUDENT*: _____**

URSULA FRANKLIN ACADEMY

A – <u>Operating with Integers</u> (*Answer without using a calculator*)

1. $4 + (-3) =$
2. $5 - 12 =$
3. $-1 - (-1) =$
4. $12 - (-12) =$
5. $-5 - 4 =$
6. $-6 - (-2) =$
7. $4(-3) =$
8. $(-4)(-3) =$
9. $\frac{16}{-2} =$
10. $\frac{-12}{-3} =$
11. $\frac{-5}{-5} =$
12. $(-5)^2 =$
13. $-4^2 =$
14. $3^3 =$
15. $(-5)(-2)(2)(-5) =$

B – <u>Order of Operations</u> (*Answer without using a calculator*)

1. $2 + 3 \times 5$
2. $4(-2) - 8 \div 2$
3. $-2(3 - 5) - 2^2$
4. $-2(5 - 3^2) \div (-4)$
5. $1 + (-1)(-1) - 1 \div (-1)$
6. $-4(-3 - 6) + \big(-2 + (-1)\big)$
7. $3(-2 + 4)^3 - 2(-4 + 1)^2$
8. $4[(32 - 5^2) - (2^3 - 2)]$

C – <u>Operating with Fractions</u> (*Answer without using a calculator.*)

1. Reduce the given fraction to its simplest form.

a) $\frac{5}{35}$ = b) $\frac{9}{12}$ = c) $\frac{26}{30}$ = d) $\frac{24}{36}$ =

2. Compute. Give your answer in simplest form. (*Hint: simplify before operating, if possible.*)

a) $\frac{2}{11} + \frac{5}{11}$ b) $\frac{11}{18} - \frac{5}{18}$ c) $\frac{1}{2} + \frac{1}{6}$

d) $\frac{2}{9} - \frac{2}{3}$ e) $\frac{2}{3} + \frac{1}{4}$ f) $-\frac{5}{7} - \frac{1}{6}$

g) $\frac{3}{10} + \frac{4}{15}$ h) $\frac{5}{6} - \frac{3}{8}$ i) $\frac{8}{25} + \frac{6}{100}$

j) $\frac{7}{20} - \frac{8}{30}$ k) $\frac{2}{3} \times \frac{4}{5}$ l) $\frac{4}{7} \div \frac{3}{5}$

m) $\frac{4}{9} \div 3$ n) $\frac{12}{35} \times \frac{7}{8}$ o) $\frac{16}{21} \div \frac{4}{3}$

D – Variables and Equations (*Answer without using a calculator*)

1. Write as a single expression.

a) $x + x =$ b) $(x)(x) =$ c) $(x)(x)(x)(x)(x) =$

d) $5x + 6x =$ e) $12x - 5x =$ f) $8x - 8x =$

2. Evaluate the expression given that $x = 2$ and $y = -3$.

a) $5x + 2y$ b) $2(x + y)$ c) $x^2 - y^2$ d) $x - 3y$

3. Solve for *x* by using opposite operations. (*Show your steps and do not use guess-and-check.*)

a) $x + 7 = 26$ b) $x - 11 = 42$ c) $8x = -24$

d) $-5x = -30$ e) $\frac{x}{5} = -6$ f) $x^2 = 49$

g) $2x - 5 = 27$ h) $-3x + 8 = -22$ i) $-x + 5 = 16$

j) $\frac{x}{4} - 3 = -1$ k) $\frac{x}{4} = \frac{5}{12}$ l) $\frac{8}{x} = \frac{6}{5}$

E – Ratios, Rates and Percentages (*Show your steps. You may use a calculator. Approximate to one decimal place if necessary.)*

1. The ratio of koi to goldfish in all of the ponds at Hypatia Farm is 4:3.

a) If there are 24 koi in a pond, how many goldfish should there be?

b) If there are 66 goldfish in a pond, how many koi should there be?

c) If there are a total of 63 fish in a pond, how many koi and how many goldfish will there be?

d) What is the percentage of goldfish in any pond?

2. Write each of the following as a unit rate. (*Include the units*.)

a) Sharma walks 1200 metres in 9 minutes.

b) Viola pays $14.30 to purchase 65 pounds of flour.

c) Leif earns $665 for 38 hours of work.

3. Which is the better deal: 15 litres of milk for $14.10 or 20 litres of milk for $18.40?

4. A cookie recipe requires 220 grams of flour for every 45 grams of sugar. How many grams of sugar would you need if you used 1 kilogram of flour?

5. There are 550 spectators at the high school soccer game. 64% are children and the rest are adults. How many children and how many adults are watching the game?

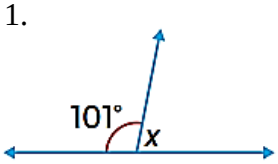
6. All Raptors jerseys are on sale at 35% off. If the original price of the jersey was $88.99, what will the sale price be before taxes?

7. A plate of spaghetti Bolognese costs $15 at Costa del Mare restaurant. If they increase the price by 15%, what will the new cost be?

F – Angles

Determine the angles indicated using a geometric property. (*Show your steps. Do not use a protractor*.)

1.



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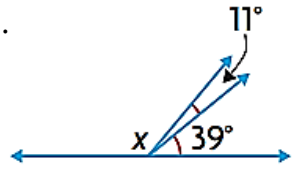

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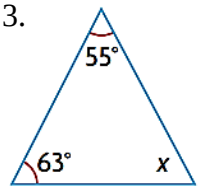

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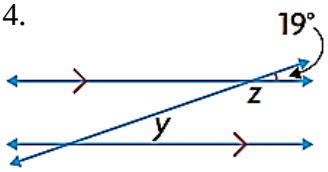

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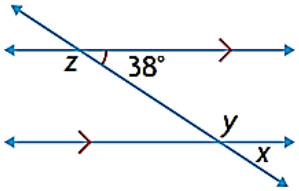

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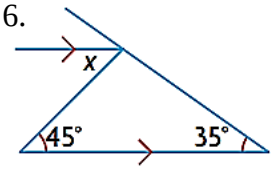

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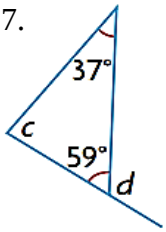

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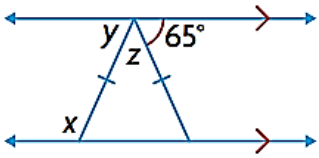

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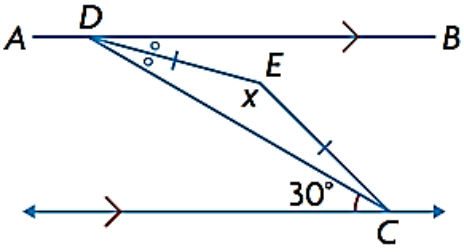

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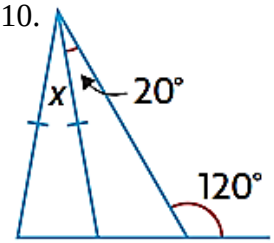
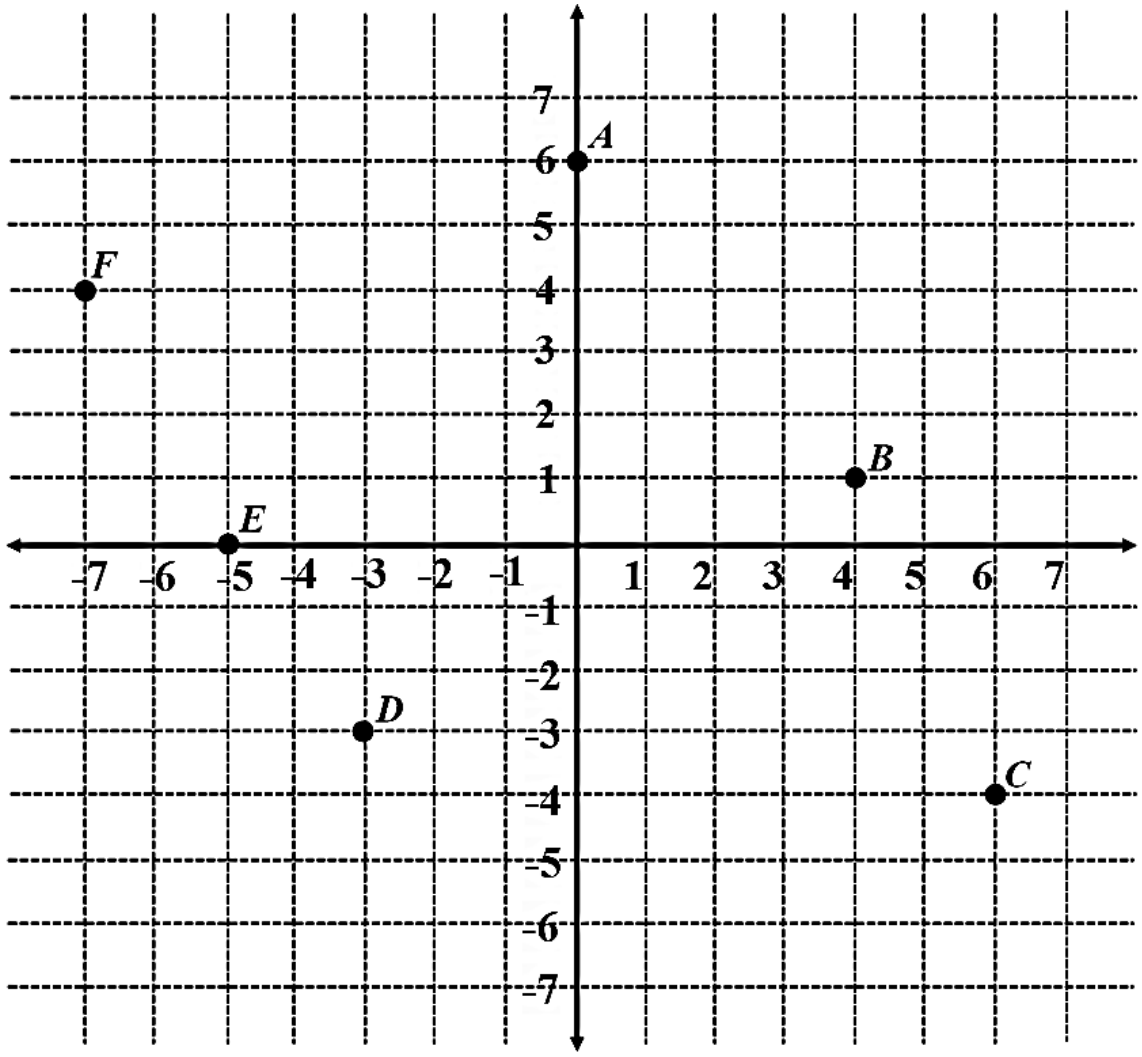


G – The Cartesian Plane



State the coordinates of the points shown in the graph.

A (,)

B (,)

C (,)

D (,)

E (,)

F (,)

Sketch and label the points on the graph above

G (2,4)

H (0,0)

I (−3,5)

J (6,0)

K (−7,−7)

L (4,−6)

Answers:

A – <u>Operating with Integers</u>

1. 1 2. -7 3. 0 4. 24 5. -9 6. -4 7. -12
8. 12 9. -8 10. 4 11. 1 12. 25 13. -16 14. 27
15. -100

B – <u>Order of Operations</u>

1. 17 2. -12 3. 0 4. -2 5. 3 6. 33 7. 6 8. 4

C – <u>Operating with Fractions</u>

1. a) $\frac{1}{7}$ b) $\frac{3}{4}$ c) $\frac{13}{15}$ d) $\frac{2}{3}$
2. a) $\frac{7}{11}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $-\frac{4}{9}$ e) $\frac{11}{12}$ f) $-\frac{37}{42}$ g) $\frac{17}{30}$
   h) $\frac{11}{24}$ i) $\frac{19}{50}$ j) $\frac{1}{12}$ k) $\frac{8}{15}$ l) $\frac{20}{21}$ m) $\frac{4}{27}$ n) $\frac{3}{10}$ o) $\frac{4}{7}$

D – <u>Variables and Equations</u>

1. a) $2x$ b) x^2 c) x^5 d) $11x$ e) $7x$ f) 0
2. a) 4 b) -2 c) -5 d) 11
3. a) 19 b) 53 c) -3 d) 6 e) -30 f) 7 g) 16
   h) 10 i) -11 j) 8 k) $\frac{5}{3}$ l) $\frac{20}{3}$

E – <u>Ratios, Rates and Percentages</u>

1. a) 18 goldfish b) 88 koi c) 36 koi, 27 goldfish d) 42.9 %
2. a) 133.3 m/min b) 0.22 $/pound c) 17.50 $/h
3. 20 l for $18.40 4. 204.5 g of sugar 5. 352 children, 198 adults 6. $57.84 7. $17.25

F – <u>Angles</u>

1. $x = 79^o$ 2. $x = 130^o$ 3. $x = 62^o$ 4. $y = 19^o, z = 161^o$ 5. $x = 38^o, y = 142^o, z = 142^o$
6. $x = 45^o$ 7. $c = 84^o, d = 121^o$ 8. $x = 115^o, y = 65^o, z = 50^o$ 9. $x = 150^o$ 10. $x = 20^o$

G – <u>The Cartesian Plane</u>

$A(0,6)$ $B(4,1)$ $C(6,-4)$ $D(-3,-3)$ $E(-5,0)$ $F(-7,4)$