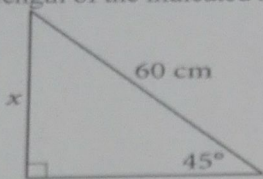


GRADE 10 APPLIED MATH EXAM REVIEW June 2017

Right Triangle Trigonometry

1. The length of the indicated side, to the nearest tenth of a centimetre, is

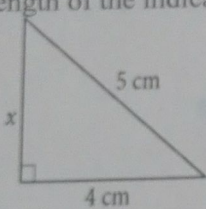


$$\sin 45 = \frac{x}{60}$$

$$x = 60 \sin 45$$

$$x = 42$$

The length of the indicated side is



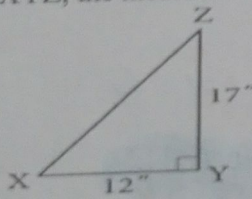
$$x^2 = 5^2 - 4^2$$

$$x = \sqrt{25 - 16}$$

$$x = \sqrt{9}$$

$$x = 3$$

In $\triangle XYZ$, the measure of $\angle X$, to the nearest degree, is

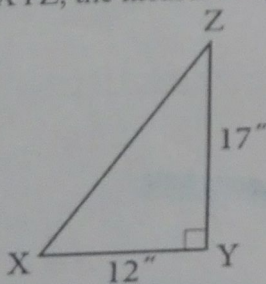


$$\tan X = \frac{17}{12}$$

$$\angle X = \tan^{-1}(17 \div 12)$$

$$= 55^\circ$$

In $\triangle XYZ$, the measure of $\angle Z$, to the nearest degree, is



$$\tan Z = \frac{12}{17}$$

$$\angle Z = \tan^{-1}(12 \div 17)$$

$$\angle Z = 35^\circ$$

Linear Relations

1. What is the slope of a line if the rise is -4 and the run is 2 ?

$$m = \frac{-4}{2}$$

$$m = -2$$

2. What is the y-intercept for $y = -4x - 7$?

$$y\text{-int} = -7$$

3. Points $M(2, 9)$ and $N(-1, 3)$ are on a line. The y-intercept is -6 . What is the equation of the line?

$$m = \frac{9-3}{2-(-1)} = \frac{6}{3} = 2$$

$$y = 2x - 6$$

4. Find the equation of the line passing through the points $M(4, -2)$ and $N(8, 2)$

$$m = \frac{-2-2}{4-8} = \frac{-4}{-4} = 1$$

$$y = mx + b$$

$$2 = 1(8) + b$$

$$2 = 8 + b$$

$$-6 = b$$

$$y = 1x - 6$$

$$y = x - 6$$

5. Rearrange $3x - y + 10 = 0$ from the standard form to the slope y-intercept form, then state the slope and y-intercept

$$3x - y = -10$$

$$-y = -3x - 10$$

$$y = 3x - 10$$

$$\text{Slope} = 3$$

$$y\text{-int} = -10$$

3. Factor each of the following

a) $x^2 + 12x + 32$

$$(x + 8)(x + 4)$$

b) $x^2 - 14x + 40$

$$(x - 4)(x - 10)$$

4. Jorge has prepared his science project on a piece of poster board that has an area represented by

$$x^2 + 5x - 50.$$

a) What are the dimensions of the board?

$$(x - 5)(x + 10)$$

length $\rightarrow x + 10$
width $\rightarrow x - 5$

b) Write an expression for the perimeter of the board.

$$P = 2(x + 10) + 2(x - 5)$$

$$= 2x + 20 + 2x - 10$$

$$P = 4x + 10$$

c) What is the actual area of the board if $x = 70$ cm?

$$A = (70)^2 + 5(70) - 50$$

$$= 5200 \text{ cm}^2$$

Solving Linear Equations

1. What mathematical operations are required to solve the linear equation

$-5x - 4 = 11$? Use these operations to solve

$$-5x = 11 + 4$$

$$-5x = 15$$

$$x = \frac{15}{-5}$$

$$x = -3$$

2. What mathematical operations are needed to solve the linear equation $\frac{y}{8} + 2 = -12$? Use these operations to solve.

To add ~~(1) subtract 2~~

~~(2) multiply by 8~~

$$\frac{y}{8} = -12 - 2$$

$$\frac{y}{8} = -14$$

$$y = 8(-14)$$

$$y = -112$$

3. Solve for x in $\frac{1}{4}(2-x) = 3$

$$2 - x = 12$$

$$-10 = x$$

4. Solve the linear equation $-2(x-4) = -3(x+2)$.

$$-2x + 8 = -3x - 6$$

$$-2x + 3x = -6 - 8$$

$$x = -14$$

$$\rightarrow 27^\circ - 15 = 12^\circ$$

Jamaica is

12°C

warmer

3. The temperature in Jamaica is 80°F , while the temperature in Toronto is 15°C . How much warmer is it in Jamaica than in Toronto? Give your answer in degrees Celsius.

$$F = \frac{9}{5}C + 32$$

$$9C = 48(5)$$

$$80 = \frac{9}{5}C + 32$$

$$9C = 240$$

$$80 - 32 = \frac{9}{5}C$$

$$C = \frac{240}{9}$$

$$48 = \frac{9}{5}C$$

$$C = 26.\bar{6}$$

$$27^\circ\text{C}$$

Quadratic Expressions

1. Find each product.

a) $(3x + 6)(5x - 2)$

$$15x^2 - 6x + 30x - 12$$

$$15x^2 + 24x - 12$$

d) $(2x - 3)^2$

$$(2x - 3)(2x - 3)$$

$$4x^2 - 6x - 6x + 9$$

$$4x^2 - 12x + 9$$

b) $(4x + 9)^2$

$$(4x + 9)(4x + 9)$$

$$16x^2 + 36x + 36x + 81$$

$$16x^2 + 72x + 81$$

c) $(5x + 9)(5x - 9)$

$$25x^2 - 45x + 45x - 81$$

$$25x^2 - 81$$

e) $(10x - 5)(5x - 10)$

$$50x^2 - 100x - 25x + 50$$

$$50x^2 - 125x + 50$$

2. Greg works as a caretaker at a park. In the fall, he rakes all the leaves in the rectangular park. The length of the park is $3x + 1$ and the width of the park is $2x + 4$, both measured in metres.

a) Find the quadratic expression that represents the area of the park.

$$A = (3x + 1)(2x + 4)$$

$$= 6x^2 + 12x + 2x + 4$$

$$A = 6x^2 + 14x + 4$$

b) Calculate the actual area that Greg has to rake if $x = 5$ m.

$$A = 6(5)^2 + 14(5) + 4$$

$$= 6(25) + 14(5) + 4$$

$$A = 150 + 70 + 4$$

$$A = 224 \text{ m}^2$$

c) Write an expression for the perimeter

$$P = 2(3x + 1) + 2(2x + 4)$$

$$= 6x + 2 + 4x + 8$$

$$P = 10x + 10$$

6. For the linear relation of $y = -3x - 4$, complete the **TABLE OF VALUES**, determine the **RATE OF CHANGE** and then **GRAPH** the relationship.

x	y	Rate of Change
0	-4	—
1	-7	$-7 - (-4) = -3$
2	-10	$-10 - (-7) = -3$
3	-13	$-13 - (-10) = -3$
4	-16	$-16 - (-13) = -3$

