

1. INTEGERS*Evaluate:*

a) $(-6) + (+7) =$

b) $(-6)(-5) =$

c) $(-5) - 5 =$

d) $5 - 3[(5 + 4) \div 3] =$

2. MONOMIALS*Simplify:*

a) $6pq - qr + 2pq$

b) $(-pq)(-8r)$

3. POWERS*Simplify:*

a) $Q^5 \cdot Q^3 =$

b) $Q^3 \cdot Q^0 =$

4. POLYNOMIALS*Perform the operations and simplify:*

a) $(3x^2 - 4x + 6) + (-x^2 + 2x - 3)$

b) $(2x - 3)(5 + 3x)$

5. FACTORING*Factor completely:*

a) $2x + 2y =$

b) $2x^2 + 8x^5 =$

c) $x^2 + 5x + 6$

d) $xy^2 + 6yx + 9x$

e) $x^2 - y^2$

6. SQUARE ROOTS*Evaluate:*

a) $\sqrt{36}$

b) $5\sqrt{12} - \sqrt{27}$

7. EQUATIONS*Solve the following equations:*

a) $5x - 3 = 8$ $x = \underline{\hspace{2cm}}$

b) $2(x - 1) = 4x + 4$ $x = \underline{\hspace{2cm}}$

c) $x^2 - 5x + 6 = 0$ $x = \underline{\hspace{2cm}}$

d) $2x^2 = 32$ $x = \underline{\hspace{2cm}}$

e) *Solve using the quadratic formula* $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$:

$x^2 + 5x - 3 = 0$

f) Solve the simultaneous equations:

$$3x - 5y = 18$$

$$4x + 5y = 17$$

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

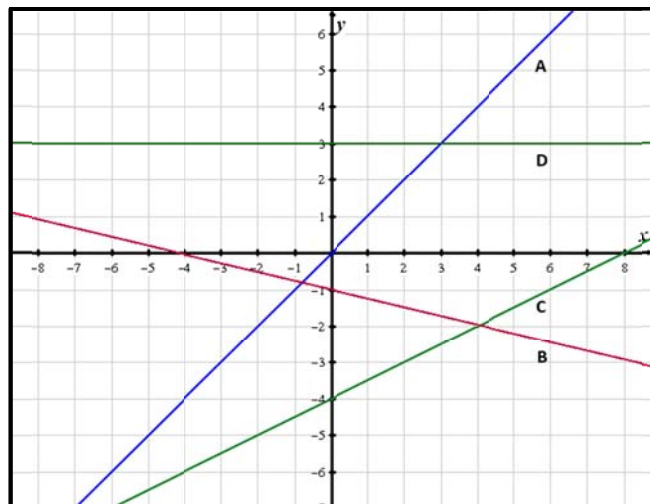
8. GRAPHING

a) The equation of line A is

b) The y-intercept of line B is:

c) The slope of line C is:

d) The equation of line D is:



9. FORMULAE AND PROBLEMS

Solve for the indicated variables:

a) $P = \frac{A}{1 + rt}$ $A = \underline{\hspace{2cm}}$

b) $A = L \times W$ $W = \underline{\hspace{2cm}}$

c) $\frac{L}{M} = \frac{2P}{Q}$ $Q = \underline{\hspace{2cm}}$

For d) and e), write an equation and solve:

d) Peter is 3 years more than 3 times the age of John. The sum of their ages is 19. Find their ages.

Equation:

Solution:

Peter's age =

John's age =

- e) One leg of a right triangle is 10 units less than the hypotenuse, and the other leg is 5 units less than the hypotenuse. Find the lengths of the legs.

Equation:

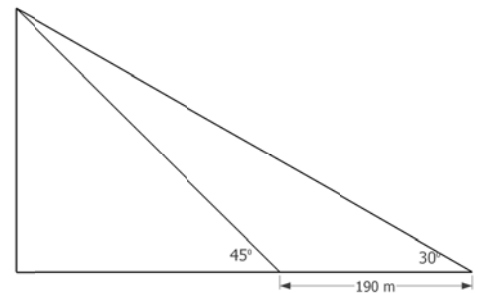
Solution:

First leg = _____

Second leg = _____

10. TRIGONOMETRY

A surveyor measured the angle of elevation to the top of a cliff as 30° . He moved 190 m closer to the cliff and measured the angle of elevation as 45° . How high is the cliff? Round the answer to the nearest tenth of a metre.



Height of the cliff = _____

1. INTEGERS

- a) 1 b) 30 c) -10 d) -4

2. MONOMIALS

- a) $8pq - qr = q(8p - r)$
b) $8pqr$

3. POWERS

- a) $Q^{5+3} = Q^8$
b) $Q^{3+0} = Q^3$

4. POLYNOMIALS

- a) $2x^2 - 2x + 3$
b) $10x + 6x^2 - 15 - 9x = 6x^2 + x - 15$

5. FACTORING

- a) $2(x + y)$
b) $2x^2(1 + 4x^3)$
c) $(x + 2)(x + 3)$
d) $x(y^2 + 6y + 9) = x(y + 3)(y + 3)$
e) $(x + y)(x - y)$

6. SQUARE ROOTS

- a) 6
b) $5 \cdot 2\sqrt{3} - 3\sqrt{3} = 10\sqrt{3} - 3\sqrt{3} = 7\sqrt{3}$

7. EQUATIONS

- a) $x = \frac{11}{5}$
b) $x = -3$
c) $x = 2$ or $x = 3$
d) $x = 4$ or $x = -4$
e) $a = 1, b = 5, c = -3$
$$x = \frac{-5 + \sqrt{37}}{2} \quad \text{or} \quad x = \frac{-5 - \sqrt{37}}{2}$$

f) $x = 5, y = -\frac{3}{5}$

8. GRAPHING

- a) $y = x$
b) -1
c) $\frac{1}{2}$
d) $y = 3$

9. FORMULAE AND PROBLEMS

a) $A = P(1 + rt)$

b) $W = \frac{A}{L}$

c) $Q = \frac{2PM}{L}$

d) Let $x = \text{John's age}$
 $3 + 3x = \text{Peter's age}$

$$x + (3 + 3x) = 19$$

$$3 + 4x = 19$$

$$4x = 16$$

$$\text{John's age} = 4 \text{ and Peter's age} = 15$$

e) Let $h = \text{the hypotenuse}$

$$h - 10 = \text{first leg}$$

$$h - 5 = \text{second leg}$$

$$(h - 10)^2 + (h - 5)^2 = h^2$$

$$h^2 - 20h + 100 + h^2 - 10h + 25 = h^2$$

$$h^2 - 30h + 125 = 0$$

$$h = 5 \text{ (absurd) or } h = 25$$

$$\text{First leg} = 15 \text{ units}$$

$$\text{Second leg} = 20 \text{ units}$$

10. TRIGONOMETRY

$h = \text{height of the cliff}$

$d = \text{distance between the man and the cliff}$

$$\frac{h}{d} = \tan 45^\circ = 1 \quad \text{or} \quad h = d$$

$$\frac{h}{d + 190} = \tan 30^\circ = \frac{\sin 30^\circ}{\cos 30^\circ} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$$

$$\frac{h}{h + 190} = \frac{1}{\sqrt{3}}$$

$$\sqrt{3}h = h + 190$$

$$h(\sqrt{3} - 1) = 190$$

$$h = \frac{190}{\sqrt{3} - 1} \approx 259.5m$$