

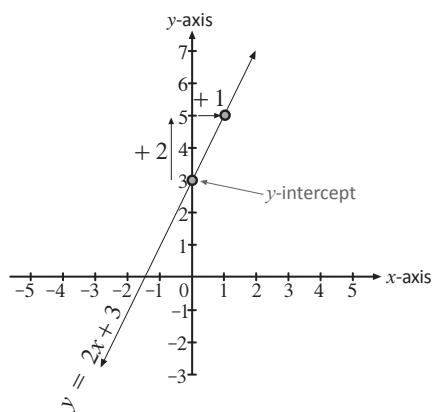
Mathletics

Holiday Review – Year Eight

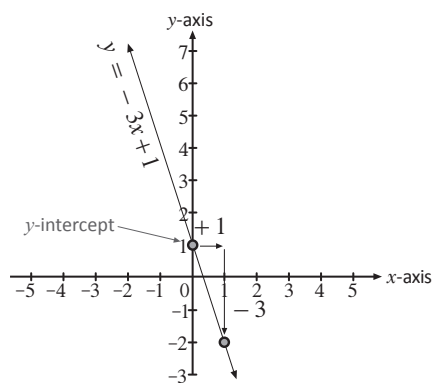
Linear Relationships:

Graphing using the intercept and gradient

a $y = 2x + 3$



b $y = -3x + 1$



Simplifying Algebra:

a $(j^2)^5 = j^2 \times j^2 \times j^2 \times j^2 \times j^2$
 $= j^{2+2+2+2+2}$
 $= j^{10}$
 $(j^2)^5 = j^{2 \times 5}$
 $= j^{10}$

b $(b^3)^3 = b^3 \times b^3 \times b^3$
 $= b^{3+3+3}$
 $= b^9$
 $(b^3)^3 = b^{3 \times 3}$
 $= b^9$

c $(r^4)^{0.5} = r^{4 \times 0.5}$
 $= r^2$

d $(x^{-2})^{-4} = x^{-2 \times -4}$
 $= x^8$

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Percentage Calculations:

a $(15.3 \div 22.5) \times 100\% = 68\%$

Pencil type

HB

b $(13.05 \div 22.5) \times 100\% = 58\%$

Pencil type

3H

c $(18.225 \div 22.5) \times 100\% = 81\%$

Pencil type

5B

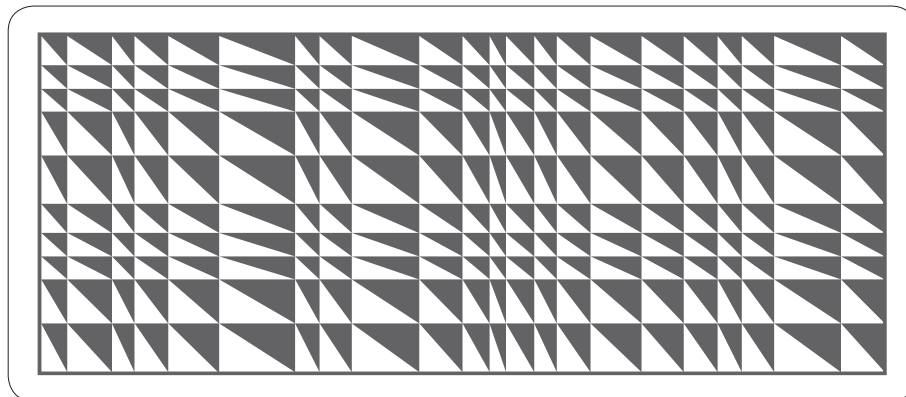
d $(16.825 \div 22.5) \times 100\% = 75\%$

Pencil type

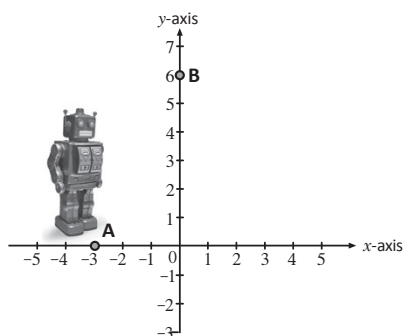
3B

Straight Lines:

This curvy optical illusion is made using lots of lines that have different slopes.



- Q The robot standing on the x -axis at point A needs to get to point B on the y -axis. The solar panels only have enough stored energy to travel the shortest straight line path. Write down the rule of the line the robot needs to follow to get from A to B.



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Rates and Ratios:

- a 4 kg of fish for \$24.00 or
8 kg of fish for \$50?

$$(4 \text{ kg for } \$24.00) \times 2 = 8 \text{ kg for } \$48.00$$

\therefore 4 kg of fish for \$24.00 is the best buy.

- b 3 sacks of potatoes for \$14 or
4 sacks of potatoes for \$17?

$$(3 \text{ sacks for } \$14.00) \times 4 = 12 \text{ sacks for } \$56.00$$

$$(4 \text{ sacks for } \$17.00) \times 3 = 12 \text{ sacks for } \$51.00$$

\therefore 4 sacks for \$17.00 is the best buy.

- c 5 sets of guitar strings for \$78.75 or
7 sets of guitar strings for \$110.95?

- d 8 loaves of sourdough bread for \$41.60 or
25 loaves of sourdough bread for \$131.25?

Pythagoras' Theorem:

Calculating the length of the hypotenuse

a $c^2 = 6^2 + 8^2$
 $\therefore c^2 = 36 + 64$
 $\therefore c^2 = 100$
 $\therefore c = \sqrt{100}$
 $\therefore c = 10$

b $g^2 = 8^2 + 15^2$
 $\therefore g^2 = 64 + 225$
 $\therefore g^2 = 289$
 $\therefore g = \sqrt{289}$
 $\therefore g = 17$