Direct Proportion (Algebraic)
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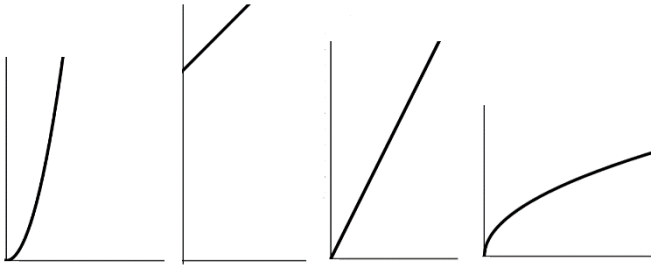
(1) Which of the following graphs does **NOT** represent direct proportion? Give a reason for your answer.



(2) y is direct proportional to x.
Complete the table below.

x	2		30	50	
y	8	24			90

(3) y is direct proportional to x^2.
Complete the table below.

x	1		3	10	
y	5	20			500

(3) y is directly proportional to x.
When $y = 4, x = 12$.
(a) Write an equation connecting x and y.
(b) Use your answer to part (a) to find the value of y when $x = 10$.
(c) Use your answer to part (a) to find the value of x when $y = 60$.

(4) y is directly proportional to the square of x.
When $y = 100, x = 5$
(a) Write an equation connecting x and y.
(b) Use your answer to part (a) to find the value of y when $x = 9$.
(c) Use your answer to part (a) to find the value of x when $y = 400$.

(5) Given that $y \propto \sqrt{x}$ and $y = 12$ when $x = 36$
(a) Write an equation connecting x and y.
(b) Use your answer to part (a) to find the value of y when $x = 25$.
(c) Use your answer to part (a) to find the value of x when $y = 8$.

(6) T is proportional to $\sqrt[3]{P}$. When $T = 20, P = 8$
(a) Find the value of T when $P = 27$.
(b) Find the value of P when $T = 6$

(7) M varies directly with the square of N.
$M = 12$ when $N = 2$.
Without a calculator, find the value of N when $M = 81$. Give your answer in the form $a\sqrt{b}$.

(8) The volume (V) of a cuboid with a fixed height is directly proportion to the area of the base of the cuboid (A).
When the volume is 48 the area is 12. Find the area when the volume is 900.

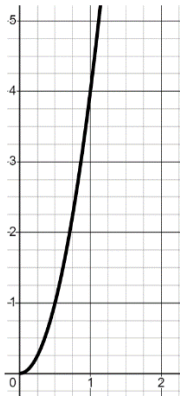
(9) A toy car is started from rest. The velocity of a car is directly to proportional to the time the car has been moving. When after 2 seconds the car has velocity $6m/s$. Find when the car has velocity $24m/s$.

(10) $T \propto \sqrt[4]{R}$. When $R = 625,\ T = 30$.
Find the least integer value of R for which $T > 50$.

(11) W is directlty proportion to V.
When $W = 8,\ V = 32$.
What happens to V when W is halved?

(12) Y is proportional to the cube of X.
When $Y = 54,\ X = 3$.
Find an expression for Y when $X = 2x$.

(13) y varies as x^2. The graph below shows the relationship between x and y.



Find y when $x = 144$.