DIRECT VARIATION WORKSHEET

1. y is directly proportional to the square of x. Given that $y = 2$ when $x = 4$, find y when $x = 10$.
2. y is directly proportional to the square of x. Given that $y = 50$ when $x = 5$, find the value of y when $x = 3$.
3. y is directly proportional to the square of x. Given that $y = 8$ when $x = 4$, find y when $x = 3$.
4. y is directly proportional to the square of x. Given that $y = 20$ when $x = 10$, find y when $x = 6$.
5. P is directly proportional to the square of Q. When $P = 9$, $Q = 6$.
   (a) Find the formula for P in terms of Q.
   (b) Find the values of Q when $P = 25$.
6. The cost of a mirror is directly proportional to the square of its width. A mirror of width 40cm costs \$24. Work out the cost of a mirror of width 60cm.
7. When the speed of a car is v m/s, its braking distance is d m.
   d is directly proportional to the **square** of v.
   When the speed of the car is 8 m/s the braking distance is 5 m.
   Find the formula for d in terms of v and hence find the braking distance when the speed of the car is 40 m/s.
8. b is directly proportional to the cube of a. Given that $b = 4$ when $a = 2$, find b when $a = 5$.
9. R is directly proportional to the cube of p. When $p = 2$, $R = 24$.
   (a) Find the formula for R in terms of p.
   (b) Find the value of p when $R = 192$.
10. M is directly proportional to L^3. How many times larger is M when L is multiplied by 2?
11. y is directly proportional to the square root of x. Given that $y = 12$ when $x = 36$, find
    (a) the formula for y in terms of x,
    (b) the value of x when $y = 10$.
12. Given that p is directly proportional to q, find the value of r.

p	27	33
q	9	r

ANSWERS

1. $y = 12.5$
2. $y = 18$
3. $y = \frac{9}{2}$
4. $y = \frac{36}{5}$
5. (a) $P = \frac{1}{4}Q^2$
   (b) $Q = \pm 10$
6. \$54
7. $d = \frac{5}{64}v^2$; $d = 125$ m
8. $b = 62.5$
9. (a) $R = 3p^3$ (b) $p = 4$
10. 8
11. (a) $y = 2\sqrt{x}$ (b) $x = 25$
12. $r = 11$