

PATTERNS

term¹
↓
5, 10, 15, 20, _____

term²
↓

term³
↓

term⁴
↓

add 5 each time

expression

$$5n$$

where n is
the term number

We know repeated
addition is the same
as multiplication

$$\text{ex. } 5 + 5 + 5 = 5 \times 3$$

$$100^{\text{th}} \text{ term: } 5 \times 100 = 500$$

14, 11, 8, _____

subtract 3

$$-3n + 17$$

$$100^{\text{th}} \text{ term: } -3(100) + 17$$
$$-300 + 17$$
$$-283$$

YOU FIGURE OUT THE MULTIPLICATION FACTOR
(HOW MUCH IS ADDED EACH TIME) THEN YOU
APPLY THAT TO TERM ONE AND SEE HOW
MUCH YOU NEED TO ADD OR SUBTRACT TO
GET IT CORRECT



How many people can sit around
1 table? 4

If you put two tables together,
how many will the new
arrangement seat? 6

What if there are 10 tables?

What if there are 378 tables in
a row... how many people would
that seat?

3 tables together: 8

Pattern: 4, 6, 8, 10, ...

Pattern: adding 2

Expression: $2n + 2$

10 tables: $2(10) + 2$

$$2(1) = 2 + 2 = 4$$

↓
term 1

↓
answer

378 tables: $2(378) + 2$

758

Time (t minutes)	Height (h metres)
0	10 000
1	9 700
2	9 400
3	9 100
4	8 800

a) Write an expression for the height in terms of the time since the plane began its descent.

start here
 because we want to start with term 1
 9700, 9400, 9100, 8800, ... pattern =
 -300

term #'s because its counting up by 1
 $-300n$
 term 1 = $-300(1)$
 what to add to get
 actual term 1 (9700)

$$-300 + 10000 = 9700$$

Expression: $-300n + 10000$

b) Write an equation that relates the height of the plane to the time since it began its descent
 letters in our equation should be h (for height) and t (for time)

$$h = -300t + 10000$$

c) What is the height of the plane after 15 min?

$$h = -300(15) + 10000$$

$$h = 5500$$

d) How long after beginning its descent does the plane land?

$$h = -300t + 10000$$

$$0 = -300t + 10000$$

-10000

-10000

$$\frac{-10000}{-300} = \frac{-300t}{-300}$$

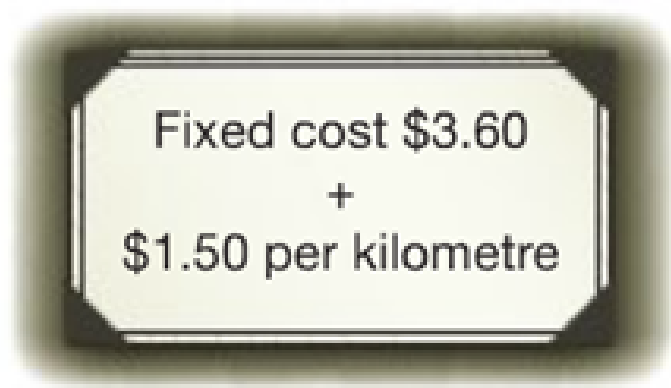
$$33.\bar{3} = t$$

~~#~~ what you do to one side of an equation you have to do to the other

Go in the backwards order of BEDMAS when rearranging equations

SAM & DEB like to rearrange equations

I called Kelly's Cabs. The cost of a ride is shown on a poster in the cab.



a) Write an expression for the fare in terms of the fixed cost and the cost per kilometre.

# of km	0	1	2	3
cost	3.60	5.10	6.60	8.10

pattern: adding 1.50

Expression: $1.50n + 3.60$

b) Write an equation that relates the fare to the distance travelled.

$$C = 1.50k + 3.60$$

c) What is the fare for an 11-km ride?

$$C = 1.50(11) + 3.60$$
$$C = 20.10$$