

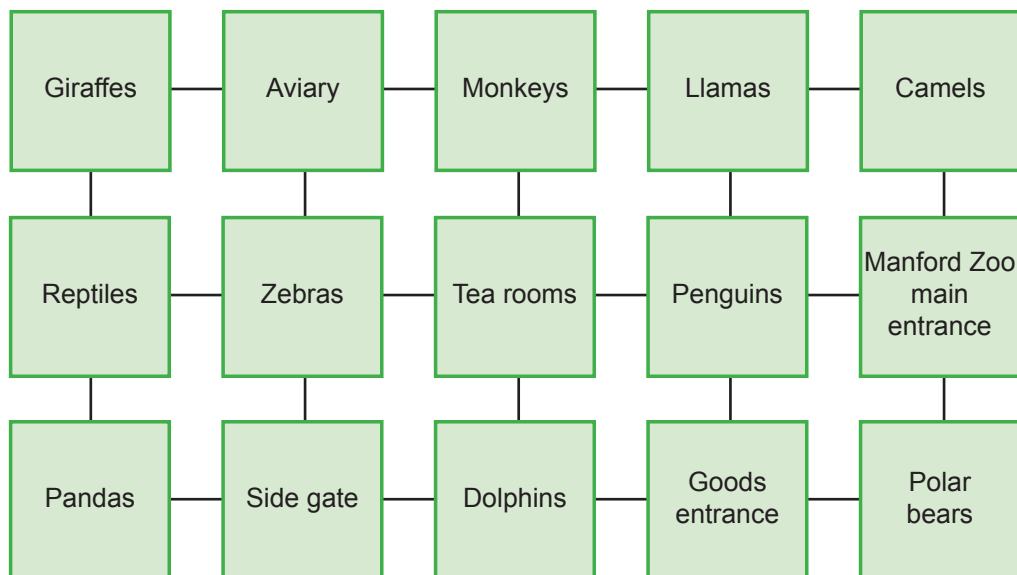


Lesson 1

Resource 1.5

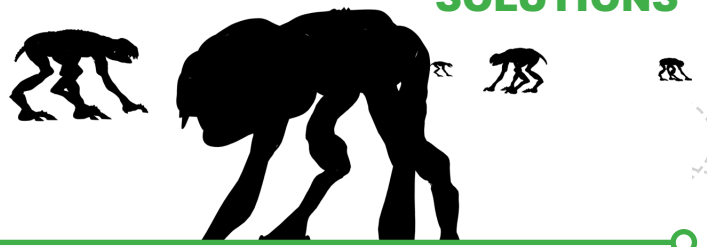
- ▶ 'I'm standing on the roof of the Fire Station. I can see the statue in Manford Square **2 ½ miles** away as the crow flies on the other side of the river.'
- ▶ 'We were both watching the first spaceship. Jen thought it landed **2 kilometres** from The Mosque but Leela thought it landed **a quarter of a mile** from Manford Museum.'
- ▶ 'As far as I could tell, the second ship came down **three-quarters of a mile** north of the Police Station.'
- ▶ 'I'm speaking to you from ZFM House. The third ship landed to the **north-west** of me at the same distance from King's School as it is from Queen's College.'
- ▶ 'Whoever is behind these spaceships must have a plan. The ships have landed at the four corners of a **parallelogram**.'
- ▶ 'I was watching from the Observatory as the spaceships landed. As far as I could judge, only the first spaceship landed anywhere to the **south** of the Observatory.'
- ▶ 'From the top of the tower of St Andrew's Cathedral, we couldn't see any ships to the **north** of the tower but we watched one spaceship land due **south** of us.'
- ▶ 'I think the fourth spaceship has come down very close to us at **Manford TV Station**.'

Resource 1.7 (supplementary problem)



a The side gate is at C9

b The giraffes are at B11



Resource 1.9 (homework)

Tasks A and B

Answers will depend on the data that pupils have gathered.

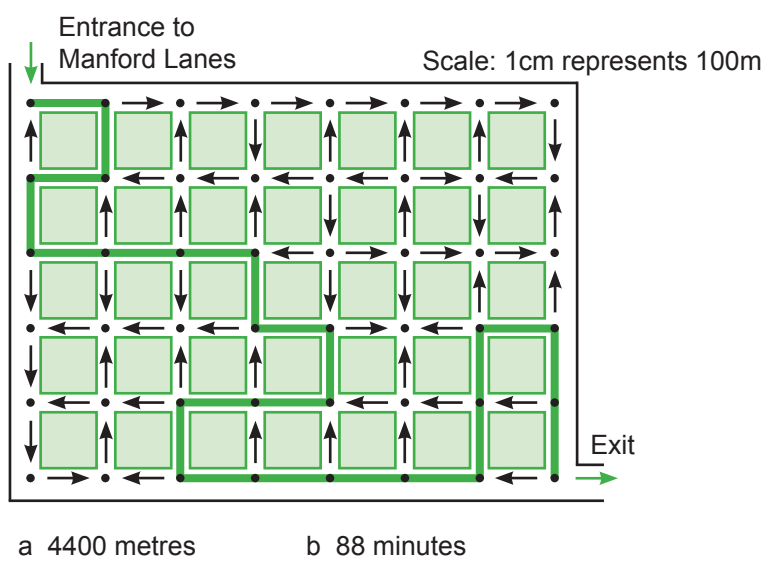
Task C

- 5 Some factors that affect walking speed are going uphill or downhill, the roughness of the ground, whether it is dark or light, wind strength and direction, and the weight you are carrying, e.g. a heavy backpack can add 1 km/h to your average walking speed on level ground.



Lesson 2

Resource 2.4 (supplementary problem)



Resource 2.6 (homework)

Task A

- 1 4 km/h 2 16 km/h 3 4 km 4 4 km takes 1 hour 36 minutes walking at 2.5 km/h, and 15 minutes in the bus at 16 km/h. So it takes 1 hour 21 minutes longer to walk.

Task B

Time(h)	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Number of Aliens	$8 = 2^3$	$16 = 2^4$	$32 = 2^5$	$64 = 2^6$	$128 = 2^7$	$256 = 2^8$	$512 = 2^9$

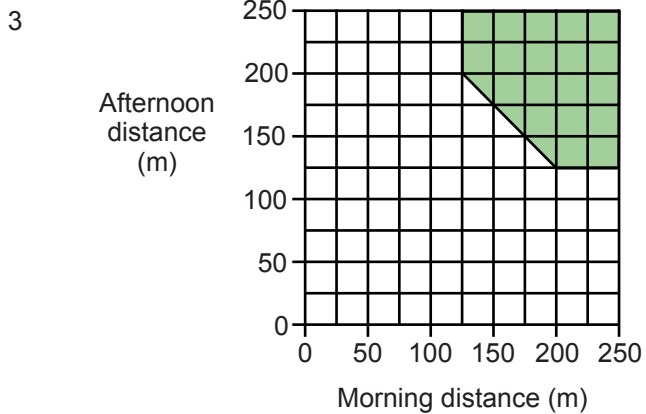
- a $2048 = 2^{11}$ b $131\,072 = 2^{17}$ c $n = 2^h + 3$

Lesson 3

Resource 3.5 (supplementary problem)

1 N

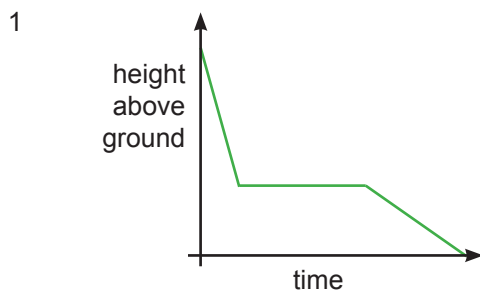
2 325 metres



4 Only two of the Aliens, B and K, travelled further in the afternoon than they did in the morning, so the teacher could possibly be right.

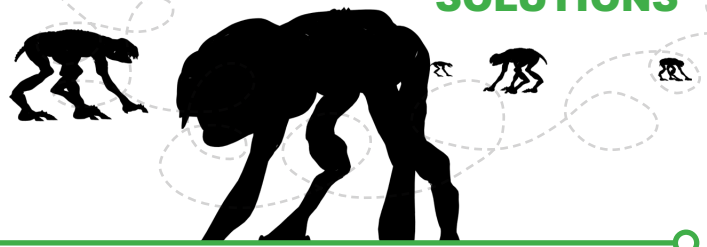
Resource 3.8 (homework)

Task A



Task B

- 2
- a 9:10 am
 - b 7:30 and 8:00 am
 - c The Motorway Service Station
 - d 75 litres
 - e 45 litres



Lesson 4

Resource 4.3

- 2 a 199
b Each number is the sum of the two numbers immediately above it.
c Next two rows are 1 7 21 35 35 21 7 1 and 1 8 28 56 70 56 28 8 1
d

Row number	1	2	3	4	5	6	7	8
Sum of numbers in row	1 2^0	2 2^1	4 2^2	8 2^3	16 2^4	32 2^5	64 2^6	128 2^7

Sum of the number in the n th row is 2^{n-1}

- e The sum of the numbers in the 21st row is 2^{20} , or 1 048 576.
f In letters, this represents NOW MAKE.
g The numbers in the sequence are powers of 11.
The formula for the n th number is 11^{n-1}
The 10th number in the sequence is 11^9 , or 2 357 947 691.
In letters, this represents FAST RETURN.

Resource 4.4

- a In the first section, press 17 four times and 16 twice.

It helps to generate sequences of multiples. For example, for the first section:

16	32	48	64	80	96
17	34	51	68	85	
23	46	69	92		
24	48	72	96		
39	78				

Scan the sequences to identify a pair of multiples with a sum of 100.

- b i. In the second section, press 18 four times and 28 once.
ii. In the third section, press 13 six times and 11 twice.