

1 Find these collective nouns in the article. What do they describe?

crew flock gang herd horde mob pack swarm

1. crew: _____
2. flock: _____
3. gang: _____
4. herd: _____
5. horde: _____
6. mob: _____
7. pack: _____
8. swarm: _____

1 Last year I was standing outside a New York department store the day the sales started. As soon as the doors opened, a mob of shoppers rushed in. Everyone was elbowing one another out of the way. A gang of teenage girls started fighting over T-shirts. Even though I had waited over an hour, I couldn't bear to go in. I was disgusted to see people acting like animals. But recently I've realized that they weren't behaving like animals—quite the opposite, in fact.

3 Staying in large groups keeps animals safe. Take a herd of reindeer. If there is a pack of wolves following the herd, it will be in danger. Wolves can hide from one reindeer, but if hundreds of reindeer are watching at the same time, one is bound to spot the predators. Alone, the reindeer are helpless, but together they are strong.

5 Scientists have also developed search-and-rescue robots that work in the same way as ants. The robots work in disaster areas to map an affected area and transmit reliable information to rescue crews.

2 Think of birds. In autumn, you see enormous flocks of starlings in an astonishing, natural display of formation flying. Thousands fly together, but they never collide. They move as a single organism. How does this happen? Peter Miller discusses it in his best-seller *The Smart Swarm*. He explains that each starling only watches the six birds closest to it. It tracks those birds at all times and copies their movements. This way, the birds keep moving as one large flock.

4 Miller describes how scientists are applying some of the principles of swarms to solve human problems. For example, a trucking company was inspired by a swarm of ants. When ants look for food, they leave chemicals called pheromones to record the most successful routes for finding food. The company created a computer model for routing its trucks inspired by the ants' behavior. This saved the company thousands of dollars.

6 Miller also shows how we can learn to manage groups of people by studying animal behavior. In certain situations, such as at an airport, people develop a herd mentality. They all do the same thing, following the leader. Crowds are only intelligent if individual members act responsibly and make their own decisions. By observing animal movements, it may be possible to organize public spaces better and prevent crazy situations like the rush during sales. So next time you're fighting with hordes of shoppers, you'd better grab a copy of this book, alongside those designer sunglasses!

1 Identify these collective nouns in the article. Match them to the correct category.

1. Which nouns in 1a usually describe...

a. people?

b. birds?

c. insects?

d. mammals?



2 Which of the words in 1a can you use to describe 1-8?

1. cows: _____
2. soccer fans: _____
3. bees: _____
4. seagulls: _____
5. criminals: _____
6. protestors: _____
7. dogs: _____
8. sailors: _____

