

## Grade 6 Chapter 6 Lesson 5 Estimating Products

### Answers

- A. For example, the truck can carry about 360 t of tar sand; each 2 t makes 1 barrel of oil; so a truckload of tar sand makes about  $360 \div 2 = 180$  barrels of oil.
- B. For example, each truckload of tar sand makes about 180 barrels of oil. Each barrel of oil equals 159 L, so you need to multiply 180 and 159 to find the number of litres in 180 barrels.
- C. For example, Kurt thought of 159 as  $100 + 59$ . He multiplied  $180 \times 100 = 18\ 000$ ; then he rounded 59 down to 50 and multiplied  $180 \times 50 = 9000$  (half of  $180 \times 100$ ). He then added them together:  $18\ 000 + 9000 = 27\ 000$ .
- D. 28 620
- E. Yes. For example, 28 620 is close to 27 000, so his estimate is reasonable.
1. For example, each truck can carry 363 t but it might not always be that full; the amount of tar in the sand might vary, and it might take more than or less than 2 t to make one barrel of oil. Also, 180 t was used as an estimate in the calculation.
2. For example, an estimate lets you know whether an answer to a calculation is reasonable and whether a mistake has been made. If you make a mistake in the first step, all the other calculations that use the first answer will be incorrect.
5. a) 100 000 pixels and 307 200 pixels  
b) For example,  $250 \times 400$  is between  $200 \times 400 = 80\ 000$  and  $300 \times 400 = 120\ 000$ ; so  $250 \times 400$  should be in the middle.  $480 \times 640$  is almost  $500 \times 600 = 300\ 000$  pixels. Both answers are reasonable.
6. a) 8760 h      b) 86 400 s  
c) For example, if you round off to 25 hours in a day and 350 days in a year, then the answer to part a) should be between  $25 \times 300 = 7500$  and  $25 \times 400 = 10\ 000$ . 8760 is reasonable. For example, if there are  $60 \text{ s} \times 60 \text{ min} = 3600 \text{ s}$  in an hour, then you need to estimate  $3600 \times 24$ . This is close to  $3600 \times 25$ , which is  $900 \times 100 = 90\ 000$ .
7. a) For example, start by estimating the number of names on one page. You can count the number of names in 1 cm. Measure how many centimetres of names are in each column, and count the number of columns. Multiply these three numbers together to get the number of names on one page. Next, you can estimate the product of the number of names on a page and the number of pages.  
b) For example, there are about 5 names in 1 cm, about 25 cm in one column, and four columns on one page. There are about  $5 \times 25 \times 4 = 500$  names on a page. There are 1532 pages in total. Round to 1500 pages.  $500 \times 1500 = 750\ 000$  names in total.