

Week 6

This week in a nutshell:

Q1 involves some quite challenging non-calculator percentage questions, so consider what support some students may need. Have a class competition for recalling the multiples of 13 in preparation for Q2 on day 4. Start with some questions multiplying terms before revising expanding brackets in Q3. In Q4 remind students about the importance of writing the units and rounding correctly. Consider playing a game of articulate for 2D and 3D shapes to encourage the use of mathematical terminology. For Q5 introduce ratio in context using examples such as 'students to teachers', recipes, or mixing paint.

Question 1: Percentage of an amount

Question 2: Handwritten calculations

Question 3: Expanding brackets

Question 4: Volume of cylinders

Question 5: Writing a ratio

The questions aim to develop and deepen understanding over the week. Due to the necessity of the topics covered this week, there is an emphasis on the interchangeability of command words, and language flexibility. It may be worth taking some extra time this week to make sure your students are developing their mathematical literacy.

This week's ideas for class discussion include:

Question 1: Percentage of an Amount

- What do you think is the most efficient non-calculator method of finding 90% of an amount? What about 95%, 99%, 45% and 49%?

Question 2: Handwritten calculations

- Consider the question 952 divided by 7. Calculate the answer using your preferred handwritten method. Does your method show all your calculations or are you calculating some things mentally?

Question 3: Expanding brackets

- Consider $4a(3 - a) = 12a - 4a^2$. Have you seen this three line symbol before and what does it mean? Can you think of a way to demonstrate that these two expressions are identically equal?

Question 4: Volume of cylinders

- How would you describe a cylinder using non-mathematical language?
- How would you describe a cylinder using as much mathematical vocabulary as possible?

Question 5: Writing a ratio

- Simon says "the ratio 2:3 is the same as the ratio 3:2 because both ratios have 2 parts of one thing and 3 parts of another". Do you think Simon is correct? Discuss the reasons for your answer.

Week 6: Day 1

1) Find 15% of 70.

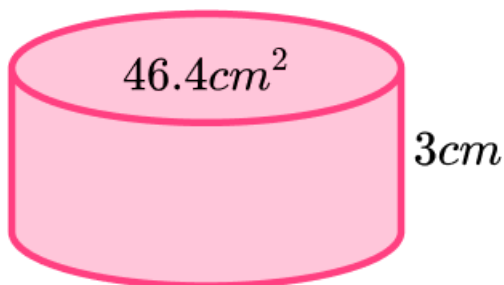
2) Calculate:

$$108 + 494 =$$

3) Expand:

$$4(2x + 3) =$$

4) The area of this cylinder's cross-section is 46.4cm^2 . The height is 3cm. Calculate the volume of the cylinder.



5) Write the ratio of blue to red.



Week 6: Day 1 Answers

- 1) Find 15% of 70.

10.5

- 2) Calculate:

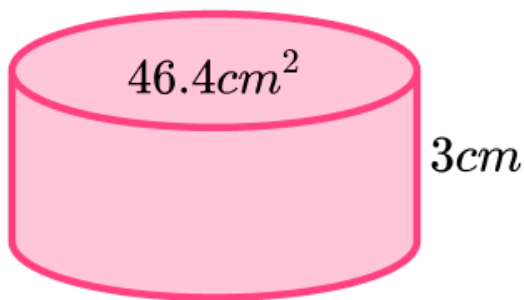
$$108 + 494 = 602$$

- 3) Expand:

$$4(2x + 3) = 8x + 12$$

- 4) The area of this cylinder's cross-section is 46.4cm^2 . The height is 3cm. Calculate the volume of the cylinder.

139.2cm^3



- 5) Write the ratio of blue to red.

4 : 3



Week 6: Day 2

1) Find 65% of 52.

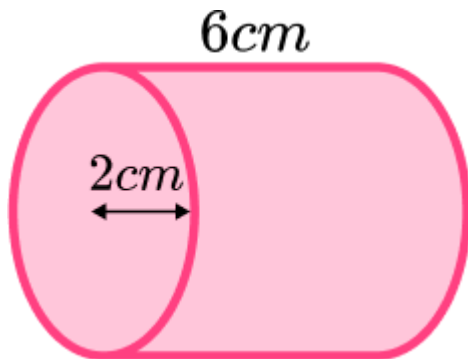
2) Calculate:

$$528 - 249 =$$

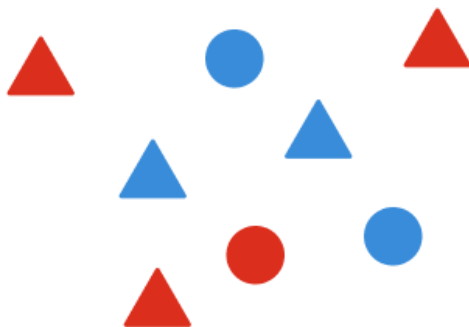
3) Expand:

$$3(5x - 2) =$$

4) Work out the volume of this cylinder. Give your answer to 1 decimal place.



5) Write the ratio of circles to triangles.



Week 6: Day 2 Answers

- 1) Find 65% of 52.

33.8

- 2) Calculate:

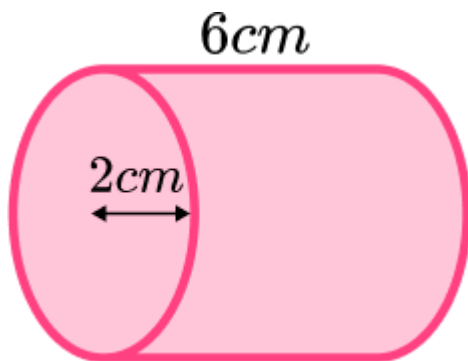
$$528 - 249 = 279$$

- 3) Expand:

$$3(5x - 2) = 15x - 6$$

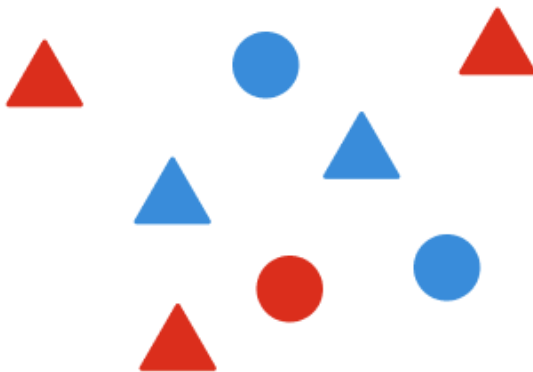
- 4) Work out the volume of this cylinder. Give your answer to 1 decimal place.

75.4cm³



- 5) Write the ratio of circles to triangles.

3 : 5



Week 6: Day 3

1) Find 95% of 65.

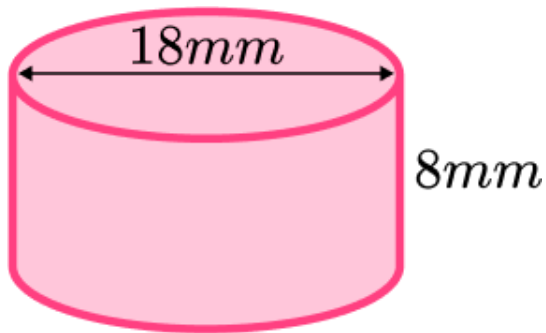
2) Calculate:

$$274 \times 36 =$$

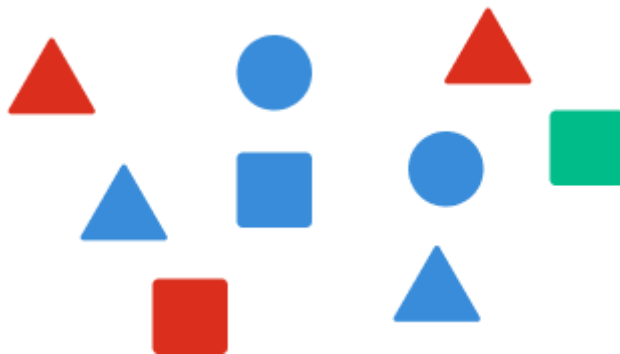
3) Expand:

$$2(7 - x) =$$

4) Work out the volume of this cylinder. Give your answer to 1 decimal place.



5) Write the ratio of blue to green to red.



Week 6: Day 3 Answers

- 1) Find 95% of 65.

61.75

- 2) Calculate:

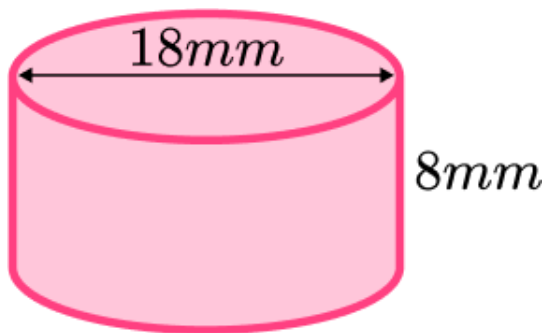
$$274 \times 36 = 9864$$

- 3) Expand:

$$2(7 - x) = 14 - 2x$$

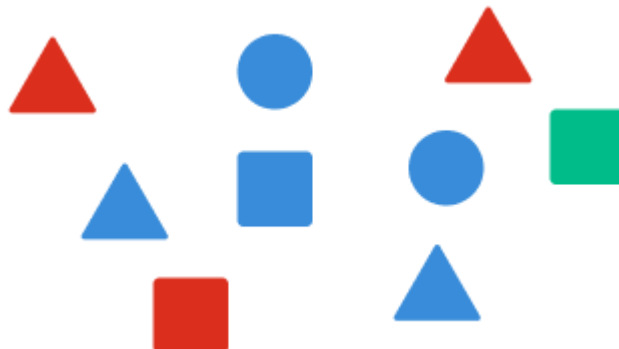
- 4) Work out the volume of this cylinder. Give your answer to 1 decimal place.

2035.8mm³



- 5) Write the ratio of blue to green to red.

5 : 1 : 3



Week 6: Day 4

1) Find 45% of 125.

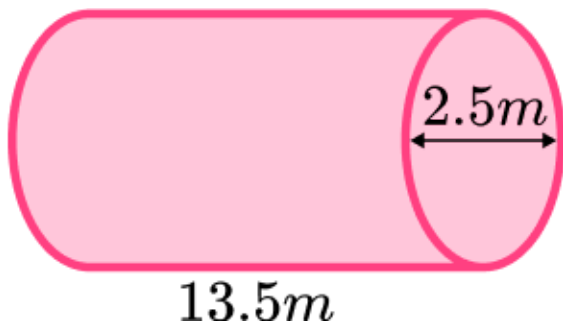
2) Calculate:

$$1768 \div 13 =$$

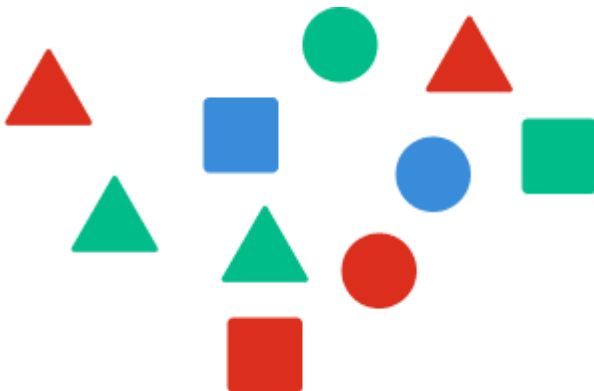
3) Expand:

$$\frac{1}{4}(8x + 16) =$$

4) Work out the volume of this cylinder. Give your answer to 3 decimal places.



5) Write the ratio of circles to squares to triangles.



Week 6: Day 4 Answers

- 1) Find 45% of 125.

56.25

- 2) Calculate:

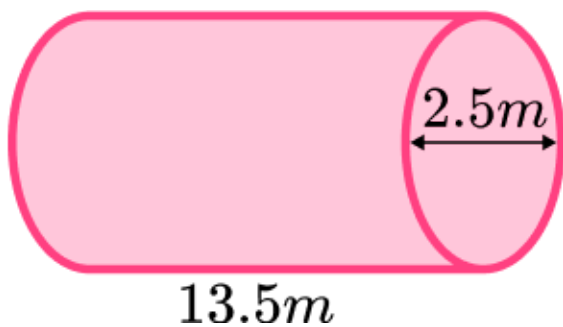
$$1768 \div 13 = 136$$

- 3) Expand:

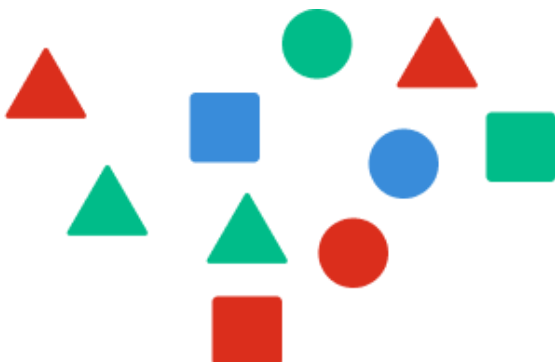
$$\frac{1}{4}(8x + 16) = 2x + 4$$

- 4) Work out the volume of this cylinder. Give your answer to 3 decimal places.

66.268cm³



- 5) Write the ratio of circles to squares to triangles. 3 : 3 : 4



Week 6: Day 5

1) Find 35% of 84.

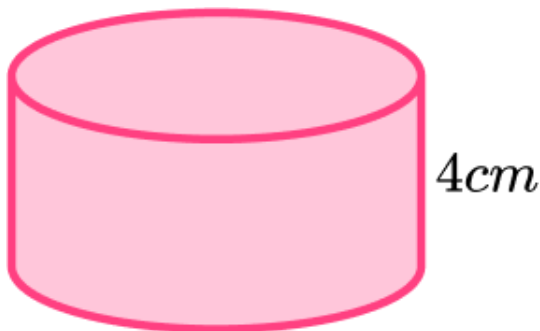
2) Calculate:

$$455 - 629 + 287 =$$

3) Expand:

$$x(5 - 2x) =$$

4) The volume of this cylinder is 180.8cm^3 . What is the area of the circular cross-section?



5) How many circles need to be added to the diagram so that the ratio of triangles to circles is 1:1?



Week 6: Day 5 Answers

- 1) Find 35% of 84.

29.4

- 2) Calculate:

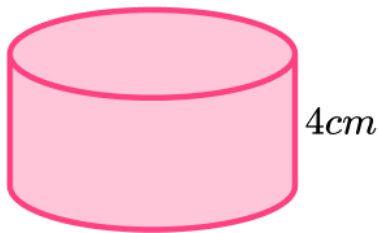
$$455 - 629 + 287 = 113$$

- 3) Expand:

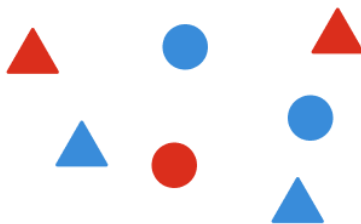
$$x(5 - 2x) = 5x - 2x^2$$

- 4) The volume of this cylinder is 180.8cm^3 . What is the area of the circular cross-section?

45.2cm²



- 5) How many circles need to be added to the diagram so that the ratio of triangles to circles is 1:1? 1



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