

Week 12

This week in a nutshell:

For Q1, discuss how in some cases it could make more sense to round to 2 significant figures or other degrees of accuracy before estimating. Q2 links back to week 10 when we looked at composite numbers. A few examples for Q3 could be required before students feel confident to work independently. Q4 links back to week 4 and 5 when circumference and area of a circle were first reviewed. The angle problems in Q5 use mostly the same angle facts that were covered in week 7, with the addition of angles in triangles and isosceles trapeziums. These questions are also more complex as they all require more than one step in order to get to the final answer.

Question 1: Estimation

Question 2: Product of primes

Question 3: Sharing in a given ratio

Question 4: Measures in circles

Question 5: Angle problems

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: Estimation

- **Simon says he is going to estimate the answer to 78.3×0.543 by first rounding to 1 significant figure. The calculation he uses is $80 \times 1 = 80$. What has Simon done wrong? Now estimate the answers to the following calculations: (a) 467×0.493 (b) 3.7×0.193 (c) $7.8 \div 0.543$ (d) $5.7 \div 0.2541$**

Question 2: Product of primes

- **Task: On a 100 square grid, highlight all the prime numbers.**

Question 3: Sharing in a given ratio

- **"Find the larger amount when £750 is shared in the ratio 47:3". Discuss the fastest way to find the solution to this question without using a calculator.**

Question 4: Measures in circles

- **Can you think of any mnemonics to help you remember the formulas for circumference and area?**

Question 5: Angle problems

- **Exam questions will often require you to state the angle facts you have used in order to calculate the missing angle. Practice filling in the blanks to angle facts such as, "____ opposite angles are ____", "____ in a ____ sum to 360° " and "alternate ____ in ____ lines are ____".**

Week 12: Day 1

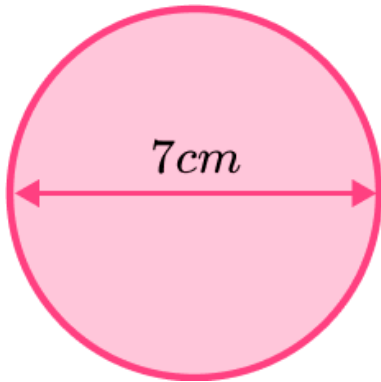
- 1) By first rounding to one significant figure, estimate:

$$11.4 \times 6.88$$

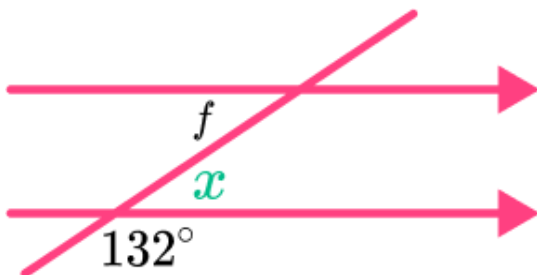
- 2) Express 77 as a product of its prime factors.

- 3) Find the larger amount when £49 is shared in the ratio 5:2

- 4) What is the circumference of this circle? Round your answer to 2 decimal places.



- 5) Determine the size of the angle marked f . Give reasons for your answer.



Week 12: Day 1 Answers

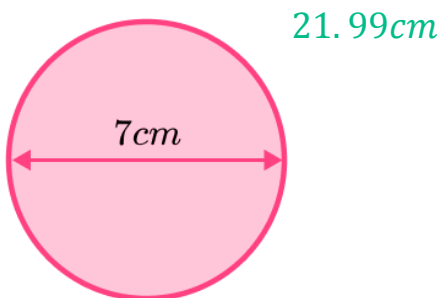
- 1) By first rounding to one significant figure, estimate:

$$11.4 \times 6.88 \qquad 10 \times 7 = 70$$

- 2) Express 77 as a product of its prime factors. 7×11

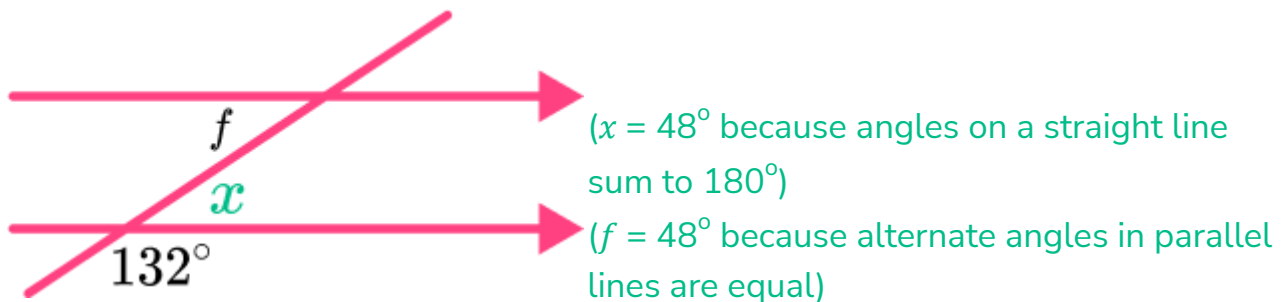
- 3) Find the larger amount when £49 is shared in the ratio 5:2 **£35**

- 4) What is the circumference of this circle? Round your answer to 2 decimal places.



- 5) Determine the size of the angle marked f . Give reasons for your answer.

$$f = 48^\circ$$



Week 12: Day 2

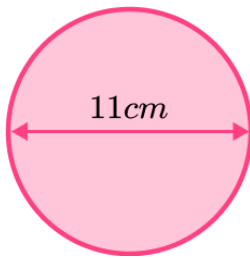
- 1) By first rounding to one significant figure, estimate:

$$8859 \div 31.2$$

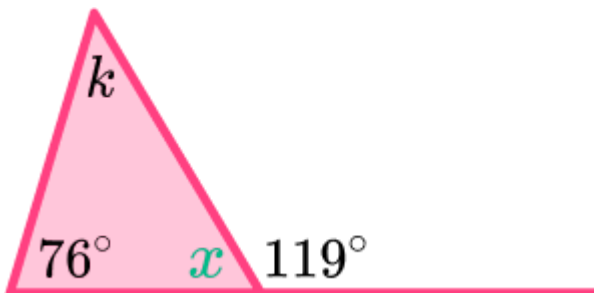
- 2) Express 72 as a product of its prime factors, using index notation.

- 3) Find the smaller amount when \$108 is shared in the ratio 2:1

- 4) What is the area of this circle? Round your answer to 2 decimal places.



- 5) Calculate the size of angle k . Give reasons for your answer.



Week 12: Day 2 Answers

- 1) By first rounding to one significant figure, estimate:

$$8859 \div 31.2$$

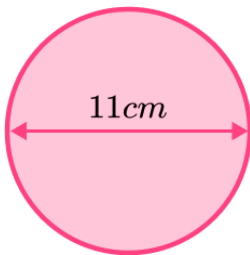
$$9000 \div 30 = 300$$

- 2) Express 72 as a product of its prime factors, using index notation.

$$2^3 \times 3^2$$

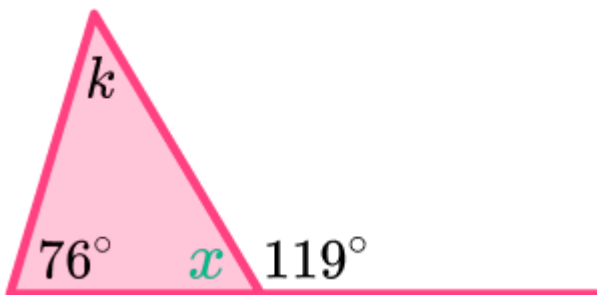
- 3) Find the smaller amount when \$108 is shared in the ratio 2:1 \$36

- 4) What is the area of this circle? Round your answer to 2 decimal places.



$$95.03\text{cm}^2$$

- 5) Calculate the size of angle k . Give reasons for your answer. $k=43^\circ$



($x = 61^\circ$ because angles on a straight line sum to 180°)

($k = 43^\circ$ because angles in a triangle sum to 180°)

Week 12: Day 3

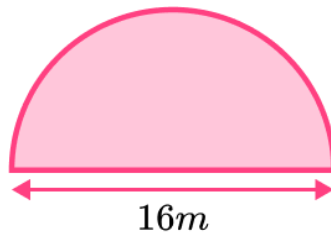
- 1) By first rounding to one significant figure, estimate:

$$214 \div 48.3$$

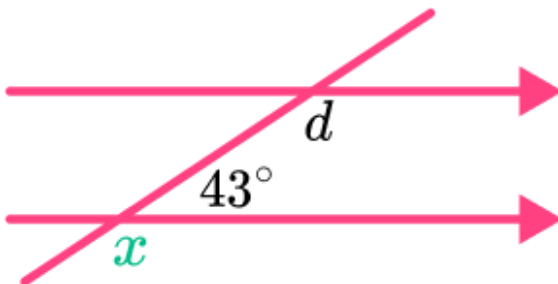
- 2) Express 148 as a product of its prime factors, using index notation.

- 3) Find the larger amount when 350cm is shared in the ratio 4:1

- 4) Find the area of this semi-circle. Round your answer to 2 decimal places.



- 5) Determine the size of angle d . Give reasons for your answer.



Week 12: Day 3 Answers

- 1) By first rounding to one significant figure, estimate:

$$214 \div 48.3 \quad 200 \div 50 = 4$$

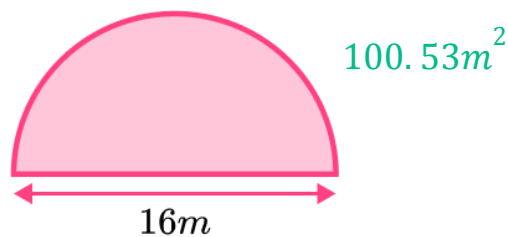
- 2) Express 148 as a product of its prime factors, using index notation.

$$2^2 \times 37$$

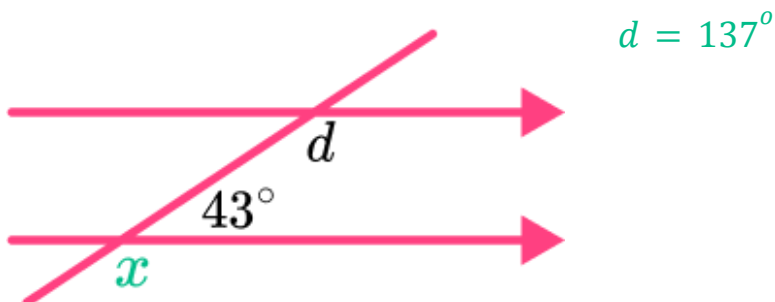
- 3) Find the larger amount when 350cm is shared in the ratio 4:1

$$280\text{cm}$$

- 4) Find the area of this semi-circle. Round your answer to 2 decimal places.



- 5) Determine the size of angle d . Give reasons for your answer.



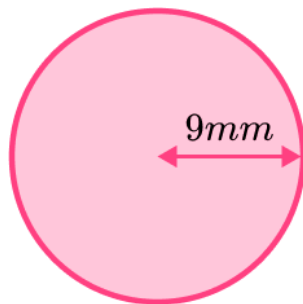
Week 12: Day 4

- 1) **By first rounding to one significant figure, estimate:**
 $34.2 \times 4.74 \div 9.59$

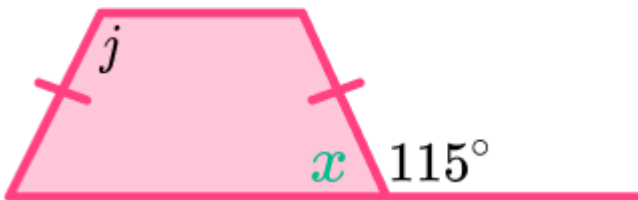
- 2) **Express 189 as a product of its prime factors, using index notation.**

- 3) **Find the smallest amount when £150 is shared in the ratio 2:3:5**

- 4) **Find the circumference of this circle. Round your answer to 2 decimal places.**



- 5) **Calculate the size of the angle marked j in this isosceles trapezium. Give reasons for your answer.**



Week 12: Day 4 Answers

- 1) By first rounding to one significant figure, estimate:

$$34.2 \times 4.74 \div 9.59 \quad 30 \times 5 \div 10 = 15$$

- 2) Express 189 as a product of its prime factors, using index notation.

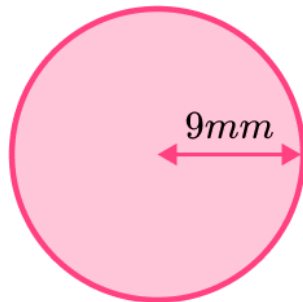
$$3^3 \times 7$$

- 3) Find the smallest amount when £150 is shared in the ratio 2:3:5

£30

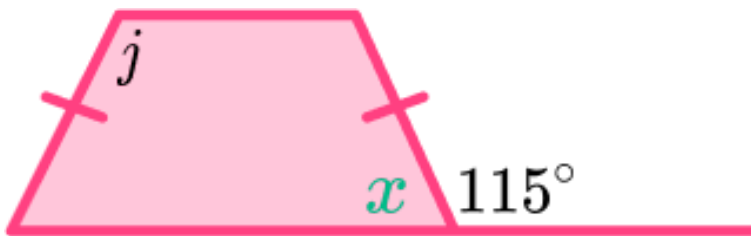
- 4) Find the circumference of this circle. Round your answer to 2 decimal places.

56.55mm



- 5) Calculate the size of the angle marked j in this isosceles trapezium. Give reasons for your answer.

$$j = 115^\circ$$



($x = 65^\circ$ because angles on a straight line sum to 180°)

($j = 115^\circ$ because angles in a quadrilateral sum to 360° and there are two pairs of equal angles in an isosceles trapezium)

Week 12: Day 5

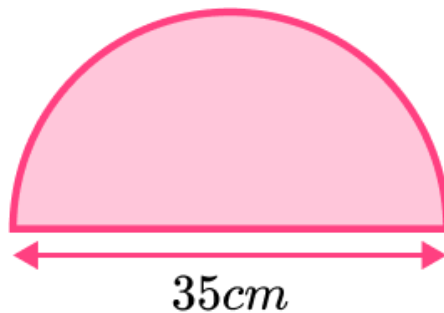
- 1) By first rounding to one significant figure, estimate:

$$69.3 \times 0.472$$

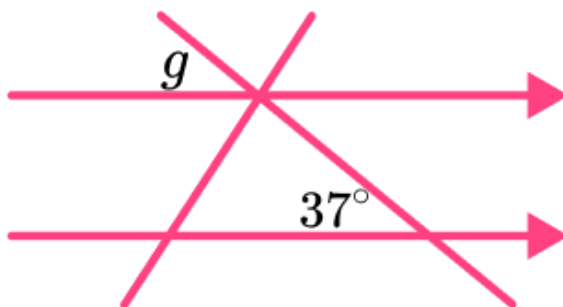
- 2) Express 1250 as a product of its prime factors, using index notation.

- 3) Find the smaller amount when 1.25m is shared in the ratio 2:3

- 4) Find the perimeter of this semi-circle. Round your answer to 2 decimal places.



- 5) Determine the size of angle g . Give reasons for your answer.



Week 12: Day 5 Answers

- 1) By first rounding to one significant figure, estimate:

$$69.3 \times 0.472 \qquad 70 \times 0.5 = 35$$

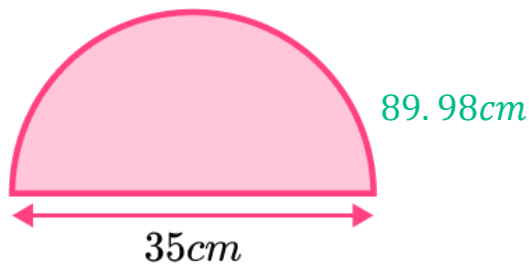
- 2) Express 1250 as a product of its prime factors, using index notation.

$$2 \times 5^4$$

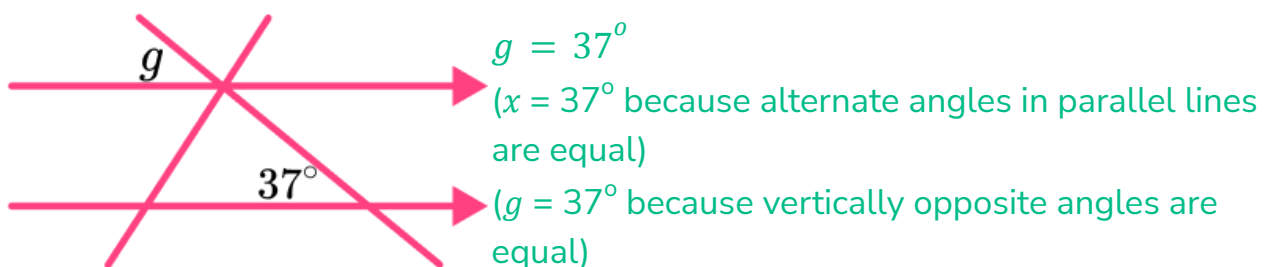
- 3) Find the smaller amount when 1.25m is shared in the ratio 2:3

$$0.5m$$

- 4) Find the perimeter of this semi-circle. Round your answer to 2 decimal places.



- 5) Determine the size of angle g . Give reasons for your answer.



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