Topic Check In - 4.01 Approximation and estimation

Round the following numbers to the stated accuracy:

1. 6.52 to the nearest whole number.

2. 846.7 to the nearest hundred.

3. 8.0624 to 1 decimal place.

4. 532 236 to 3 significant figures.

5. 0.0472 to 2 significant figures.

6. Given that the formula for area of a circle is $A = \pi r^2$, show that the area of a circle with radius 5 cm is approximately 75 cm^2.

7. The exchange rate from GBP (£) to USD ($) is £1 to $1.542. Show that £200 is approximately $300.

8. 3 people had a meal at a restaurant and the total bill was £47.38. They shared the bill equally between them. Explain why they each paid £15.80.

9. The record attendance at Wembley stadium is 89 874. On that day, the average price of a ticket was £55. Estimate the amount of money earned from ticket sales.

10. The flight distance from London to New York is 3462 miles and it takes 6.4 hours. Estimate how far an aeroplane flying from London to New York travels each hour.

Extension

A ream of paper (500 sheets) is 5.2 cm thick.

a) Estimate the thickness of one sheet of paper.

b) Estimate the number of sheets that could be stacked from the floor to the ceiling in the classroom.

Answers

1. 7

2. 800

3. 8.1

4. 532 000

5. 0.047

6. π = 3.1415... is approximately 3 so 3 × 25 = 75

7. 1.542 is approximately 1.5 so 200 × 1.5 = 300

8. 47.38 ÷ 3 = 15.793333... but you must round up to ensure the bill is paid

9. Approximately 90 000 × 60 = 5 400 000 oe therefore approximately £5 million

10. Approximately 3000 ÷ 6 = 500 miles

Extension

a) 5 ÷ 500 = 0.01 cm (or 0.1 mm)

b) Dependent upon classroom, but approximately 10 000 sheets for every metre high

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AO1	1	Round to nearest whole number.			
AO1	2	Round to nearest hundred.			
AO1	3	Round to decimal places.			
AO1	4	Round to significant figures.			
AO1	5	Round decimals to significant figures.			
AO2	6	Estimate a calculation involving pi.			
AO2	7	Use an approximate value to estimate an answer.			
AO2	8	Round values appropriately in context.			
AO3	9	Use appropriate approximations to estimate an answer.			
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