

Challenge '26 Solutions

1	2	3	4	5	6	7
3	2	4	3	7	6	5

<h3 style="margin: 0;">1. Space Shuttles Soar!</h3> <p>You must show your working out to gain the marks:</p> <p>Enterprise = 5, Challenger = 2x Enterprise = 10 Endeavour = 5x Enterprise = 25 Columbia = Endeavour + 3 = 28 Atlantis = Columbia + 5 = 33 Discovery = Atlantis + 6 = 39</p> <ul style="list-style-type: none"> • Enterprise 5 • Challenger 10 • Endeavour 25 • Columbia 28 • Atlantis 33 • Discovery 39 	<p>3 marks: (1 for correct list, 2 for reasoning)</p> <p>No marks for just the list</p> <p>Special case: 1 mark for partially correct list with reasoning</p>
<h3 style="margin: 0;">2. Concorde Conundrum</h3>	
<p>$3600 + 22 \times 60 - 46 = \underline{4,874 \text{ seconds}}$ (= 81 minutes and 14 seconds = 1 hour, 21 minutes and 14 seconds)</p>	<p>2 marks: (1 for 4,874 1 for reasoning)</p>
<h3 style="margin: 0;">3. Stars in the Sky</h3>	
<p>Turns to starboard 000°, 144°, 288°, 072°, 216° (allow 000° again) Turns to port: 000°, 216°, 072°, 288°, 144° <u>Same set of angles, in reverse order</u></p>	<p>4 marks: (2 for starboard list, 1 for port list 1 for “same set of angles in reverse order”)</p>
<h3 style="margin: 0;">4. Racing to the Rescue</h3>	
<p>$\frac{24}{2s} + \frac{16}{s} = 14 \rightarrow \frac{56}{2s} = 14 \rightarrow \frac{56}{14} = 2s \rightarrow 2s = 4 \rightarrow s = 2 \text{ km/min}$</p> <p><u>It takes 6 minutes</u> to reach them and a further 8 minutes to transport them to the hospital.</p>	<p>3 marks: (1 for 6 minutes, 2 for calculations)</p>

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5. Five go to the Museum

- No matching initials means Will is not Well Road, or either Wright brother. As a girl took the pictures of Amelia Earhart and Howard Hughes, Will must have taken the picture of Charles Lindburgh.
- The further clues mean Will doesn't live in Abbey Avenue, Holly Street or Clover Park. He therefore lives in Olive Gardens.
- Anna didn't take Amelia Earhart's picture, so Claire must have taken that picture. We know Claire lives in Holly Street.
- We now know that Anna took the picture of Howard Hughes. She must live on Well Road.
- Oscar lives on Clover Park, and he must now have taken the picture of Wilbur Wright.
- That leaves Harry with Abbey Avenue and Orville Wright.

Name	Address	Aviator
Anna	Well Road	Howard Hughes
Claire	Holly Street	Amelia Earhart
Harry	Abbey Avenue	Orville Wright
Oscar	Clover Park	Wilbur Wright
Will	Olive Gardens	Charles Lindbergh

7 marks:
 (2 marks for all correct addresses,
 2 marks for all correct aviators,
 3 marks for systematic approach well explained)

Special case:
 Allow 1 mark for 3 correct addresses and allow 1 mark for 3 correct aviators. Max of 1 reasoning mark if solution is only partially correct.

NB 4 marks only if a fully correct solution is given without any reasoning.

6. Drone Dilemma

Drone 1 leaving Hartlepool at 0900 arrives at 0945, leaving 5 minutes before it leaves again at 0950

Drone 2 leaving Newcastle at 0910 arrives at 0945, leaving 15 minutes before it leaves at 1000

Drone 3 leaving Hartlepool at 0920 arrives at 1005, leaving 5 minutes before it leaves again at 1010

Drone 4 leaving Newcastle at 0930 arrives at 1005, leaving 15 minutes before it leaves at 1020

Drone 5 leaving Hartlepool at 0940 arrives at 1025, leaving 5 minutes before it leaves again at 1030

The drones are now in place to continue throughout the day.

5 drones, 15 minutes to load in Hartlepool, 5 minutes to load in Newcastle

6 marks:
 (1 mark for 5 drones
 1 mark for 5 minutes at Newcastle,
 1 mark for 15 minutes at Hartlepool,
 3 marks for systematic approach well explained)

Special case:
 Max of 4 for with correct answers but locations transposed.

7. Dee Disaster

Overlay on next page

5 marks:
 (1 for each correct pair of lines,
 1 for shading region
 1 for correct scale)

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