

1. (a) (i) 30 (A1) (C1)
- (ii) 32 (A1) (C1)
- (iii) $38 - 10 = 28$ (A1)(A1) (C2)
- Note: Award (A1) for 10 and 38 seen, (A1) for correct answer only.*

- (b) $0.25 \times 56 = 14$ (M1)(A1) (C2)
- Note: Award (M1) for multiplying 0.25 by 56*

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2. (a) 55 (A1) (C1)
- (i) (62.6) (A2)(ft) (C2)
- (ii) 8.86 (A1) (C1)
- Note: Follow through from their answer to part (a).*

- (c) $62.6 - 3 \times 8.86 = 36.0$ (M1)(A1)(ft) (C2)
- Note: Accept 36.
Follow through from their values in part (b) only if working is seen.*

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3. (a) (0.45, 45 %) (A1)(A1) (C2)
- Note: Award (A1) for numerator; (A1) for denominator.*
- (b) (, 0.667, , 66.6...%, 66.7 %) (A1)(A1)(ft) (C2)
- Notes: Award (A1) for numerator; (A1)(ft) for denominator; follow through from their numerator in part (a). Last mark is lost if answer is not a probability.*

- (c) (M1)
- Note: Award (M1) for correct substitution in the combined events formula. Follow through from their answer to part (a).*
- = (0.65, 65 %) (A1)(ft)
- OR**
- (M1)
- Note: Award (M1) for adding the correct fractions.*
- = (0.65, 65 %) (A1)
- OR**
- = 1 - (M1)
- Note: Award (M1) for subtraction of correct fraction from 1.*
- = (0.65, 65%) (A1) (C2)

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4. (a) (i) 6, 9, 12 (A1) (C1)
- (ii) 9 (A1)(ft) (C1)

Note: Follow through from their part (a)(i).

- (b) any element from {5, 7, 8, 10, 11} (A1)(A1)(ft) (C2)

Note: Award (A1)(ft) for finding (A B), follow through from their A.

Award full marks if all correct elements of (A B)' are listed.

(c)

$n(A \cap B) = 4$	
$15 \cap A'$	X

15 U

(R1)(A1) (C2)

Notes: Accept correct reason in words.

If the reason is incorrect, both marks are lost.

Do not award (R0)(A1).

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5. (a)

(A1) for rectangle and three intersecting circles
 (A1) for 10, (A1) for 8, 13 and 9, (A1) for 12, 15 and 17 (A4)

- (b) $100 - (9 + 12 + 13 + 15 + 10 + 17 + 8) = 16$ (M1)(A1)(ft)(G2)

Note: Follow through from their diagram.

- (c) (0.51) (A1)(ft)
 = 51% (A1)(ft)(G2)

Note: Follow through from their diagram.

- (d) **Note:** The following statements are correct. Please note that the connectives are important. It is not the same (had cereal) and (not bread) and (had cereal) or (not bread). The parentheses are not needed but are there to facilitate the understanding of the propositions.

(had cereal) and (did not have bread)
 (had cereal only) or (had cereal and fruit only)
 (had either cereal or (fruit and cereal)) and (did not have bread) (A1)(A1)

Notes: If the statements are correct but the connectives are wrong then award at most (A1)(A0).

For the statement (had only cereal) and (cereal and fruit)

award (A1)(A0).

For the statement had cereal and fruit award (A0)(A0).

- (e) (0.54, 54 %) (A1)(ft)(A1)(ft)(G2)

Note: Award (A1)(ft) for numerator, follow through from their diagram, (A1)(ft) for denominator. Follow through from total or denominator used in part (c).

- (f) (0.00909, 0.909%) (A1)(ft)(M1)(A1)(ft)(G2)

Notes: Award (A1)(ft) for their correct fractions, (M1) for multiplying two fractions, (A1)(ft) for their correct answer. Answer 0.009 with no working receives no marks. Follow through from denominator in parts (c) and (e) and from their diagram.

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6. (a) H_0 : The (average) number of meals per day a student has and gender are independent (A1)
Note: For "independent" accept "not associated" but do not accept "not related" or "not correlated".
- (b) 2 (A1)
- (c) 5.99 (accept 5.991) (A1)(ft)
Note: Follow through from their part (b).
- (d) $= 12.6 = 13$ or $\times 100 = 12.6 = 13$ (M1)(A1)(AG)
Notes: Award (M1) for correct formula and (A1) for correct substitution. Unrounded answer must be seen for the (A1) to be awarded.
- (e) 0.0321 (G2)
Note: For 0.032 award (G1)(G1)(AP). For 0.03 with no working award (G0).
- (f) $0.0321 < 5.99$ or $0.984 > 0.05$ (R1)
 accept H_0 (A1)(ft)
Note: If reason is incorrect both marks are lost, do not award (R0)(A1).

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