Name: _____ Date: _____

Choose the whole group

Participants attended a workshop at one of four centers. Use the same table for every part. Select one participant at random from the group named in each prompt.

Center	Completed	Did not complete	Total
North	14	6	20
South	9	11	20
East	18	12	30
West	9	1	10
Total	50	30	80

(a) A participant is chosen from ALL 80 participants. What is the probability that the participant is from East AND completed the workshop? Round to four decimal places.

Set it up: Whole group: all participants. Joint probability = overlap count / grand total.

Work: Overlap = 18. Grand total = 80. P(East and completed) = 18/80 = 0.2250.

Answer: 0.2250.

(b) A participant is chosen ONLY from East. What is the probability that the participant completed the workshop? Round to four decimal places.

Set it up: Whole group: participants from this center only. Conditional probability = completed in the row / row total.

Work: East total = 30; completed = 18. P(completed given East) = 18/30 = 0.6000.

Answer: 0.6000.

(c) A participant is chosen ONLY from those who completed. What is the probability that the participant is from East? Round to four decimal places.

Set it up: Whole group: all participants who completed. Reverse conditional probability = this center and completed / completed total.

Work: Completed total = 50; overlap = 18. P(East given completed) = 18/50 = 0.3600.

Answer: 0.3600.

(d) A participant is chosen from ALL 80 participants. What is the probability that the participant is from East OR completed, or both? Round to four decimal places.

Set it up: Whole group: all participants. Union probability = (row total plus completed total minus overlap) / grand total.

Work: P(East or completed) = (30 + 50 minus 18)/80 = 62/80 = 0.7750.

Answer: 0.7750.

Reverse the condition

Participants attended a workshop at one of four centers. Use the same table for every part. Select one participant at random from the group named in each prompt.

Center	Completed	Did not complete	Total
North	18	12	30
South	12	8	20
East	6	4	10
West	24	16	40
Total	60	40	100

(a) A participant is chosen from ALL 100 participants. What is the probability that the participant is from East AND completed the workshop? Round to four decimal places.

Set it up: Whole group: all participants. Joint probability = overlap count / grand total.

Work: Overlap = 6. Grand total = 100. P(East and completed) = 6/100 = 0.0600.

Answer: 0.0600.

(b) A participant is chosen ONLY from East. What is the probability that the participant completed the workshop? Round to four decimal places.

Set it up: Whole group: participants from this center only. Conditional probability = completed in the row / row total.

Work: East total = 10; completed = 6. P(completed given East) = 6/10 = 0.6000.

Answer: 0.6000.

(c) A participant is chosen ONLY from those who completed. What is the probability that the participant is from East? Round to four decimal places.

Set it up: Whole group: all participants who completed. Reverse conditional probability = this center and completed / completed total.

Work: Completed total = 60; overlap = 6. P(East given completed) = 6/60 = 0.1000.

Answer: 0.1000.

(d) A participant is chosen from ALL 100 participants. What is the probability that the participant is from East OR completed, or both? Round to four decimal places.

Set it up: Whole group: all participants. Union probability = (row total plus completed total minus overlap) / grand total.

Work: P(East or completed) = (10 + 60 minus 6)/100 = 64/100 = 0.6400.

Answer: 0.6400.

A zero in the table

Participants attended a workshop at one of four centers. Use the same table for every part. Select one participant at random from the group named in each prompt.

Center	Completed	Did not complete	Total
North	8	0	8
South	3	7	10
East	4	6	10
West	5	7	12
Total	20	20	40

(a) A participant is chosen from ALL 40 participants. What is the probability that the participant is from North AND completed the workshop? Round to four decimal places.

Set it up: Whole group: all participants. Joint probability = overlap count / grand total.

Work: Overlap = 8. Grand total = 40. P(North and completed) = 8/40 = 0.2000.

Answer: 0.2000.

(b) A participant is chosen ONLY from North. What is the probability that the participant completed the workshop? Round to four decimal places.

Set it up: Whole group: participants from this center only. Conditional probability = completed in the row / row total.

Work: North total = 8; completed = 8. P(completed given North) = 8/8 = 1.0000.

Answer: 1.0000.

(c) A participant is chosen ONLY from those who completed. What is the probability that the participant is from North? Round to four decimal places.

Set it up: Whole group: all participants who completed. Reverse conditional probability = this center and completed / completed total.

Work: Completed total = 20; overlap = 8. P(North given completed) = 8/20 = 0.4000.

Answer: 0.4000.

(d) A participant is chosen from ALL 40 participants. What is the probability that the participant is from North OR completed, or both? Round to four decimal places.

Set it up: Whole group: all participants. Union probability = (row total plus completed total minus overlap) / grand total.

Work: P(North or completed) = (8 + 20 minus 8)/40 = 20/40 = 0.5000.

Answer: 0.5000.