Welcome Back MYP Math 9!

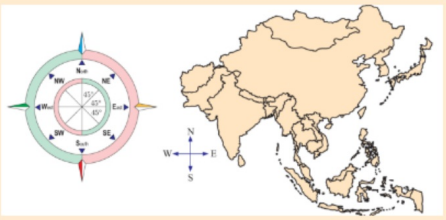
Reflect on last night's exercises.

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: 11/20 Topic: 13D Solving for angles	0 1 2	
Tuesday Date: 11/21 Topic: 13E: Problem solving	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

13F BEARINGS

Class Plan

1. Warm-up
2. Bearings
3. Joke Break
4. Practice

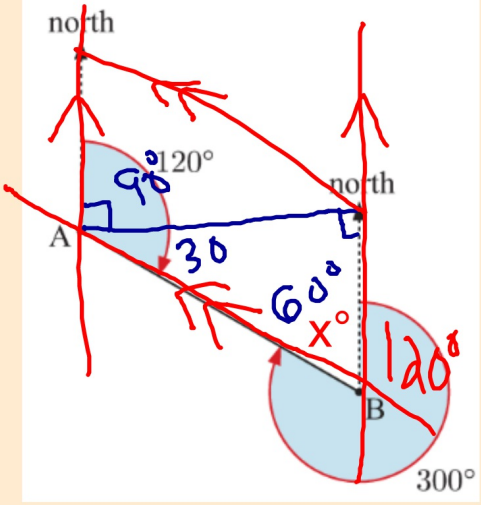


13F **BEARINGS**

Warm-up:

Quad sum = 360°

Solve for the unknown angle measure.
Justify your answer.



Circle: 360°

$x° = 60°$

Δ Sum = 180°

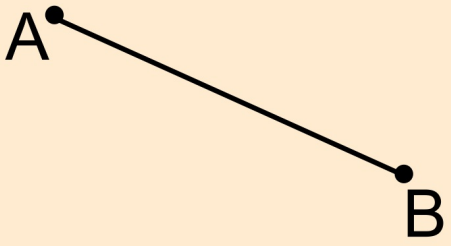
CA are $\cong$, from parallel

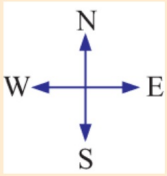
N || N

13F BEARINGS

Introduction:

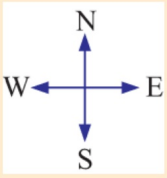
How can I measure direction between two points using degrees?





F **BEARINGS**

Compass Bearings

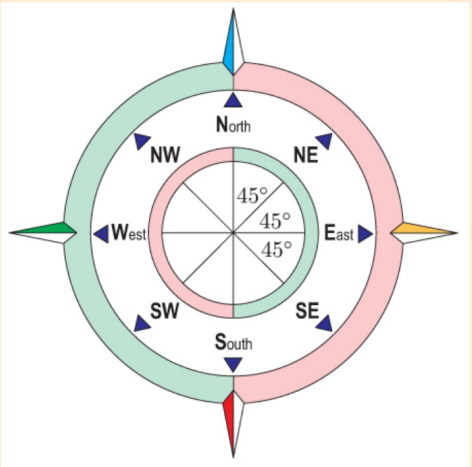


Cardinal:

N, S, E, W.

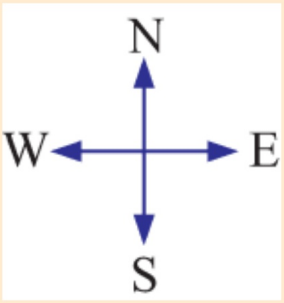
Ordinal:

NE, SE, NW, SW



F *Recall previous knowlege...* **BEARINGS**

What do you think a
true bearing is?



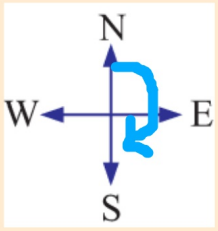
F **BEARINGS**

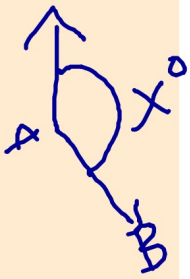
True Bearing

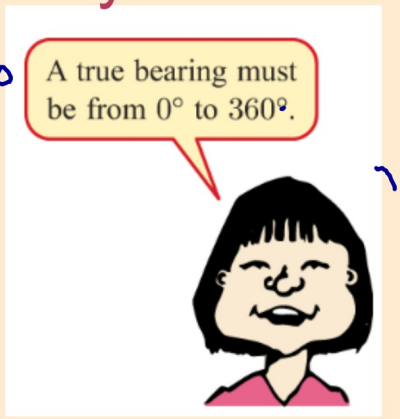
(*aka* true north direction)

*Clockwise measure of an angle.

*Starting position is always north going right.

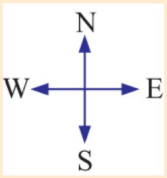






F True Bearing BEARINGS

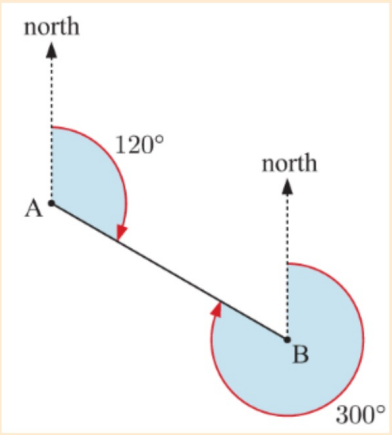
Important notes:



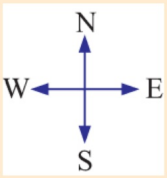
- A true bearing - 3 digits
  - Example: 070°, not 70°.
- Bearings of:

to A from B ≠ to B from A.

Why?



F True Bearing BEARINGS

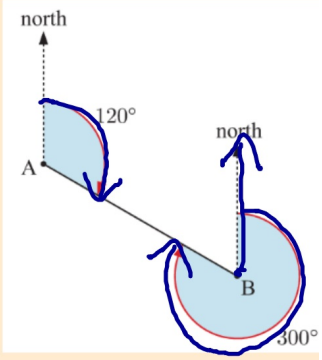


Important notes:

A from **B** ≠ **B** from **A**.

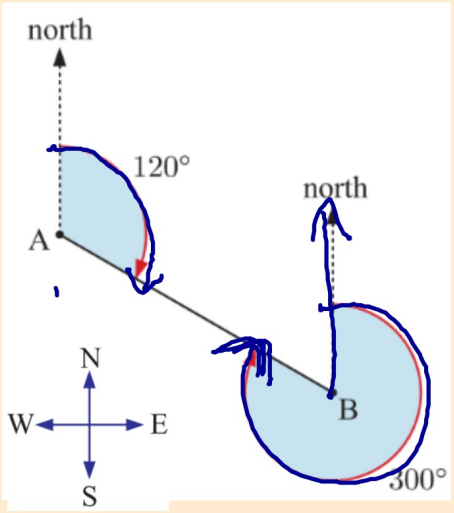
-Example: Right diagram.

-Bearing of "A from B" (aka ***to A from B***), and bearing of B from A, always differ by 180°.



F True Bearing BEARINGS

Example: Find the bearings.



1) *to* B from A

120°

2) *to* A from B

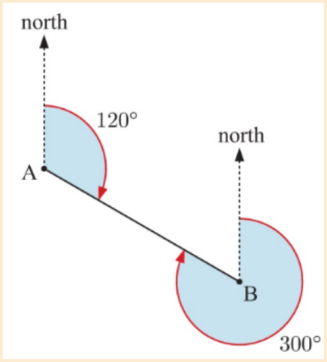
300°

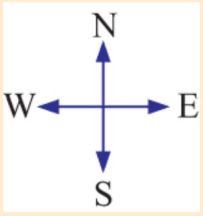
300 − 120 = 180°

Face North, Turn Clockwise

Imagine you are standing at point A, facing north. You turn **clockwise** through an angle until you face B. The **bearing of B from A** is the angle through which you have turned.

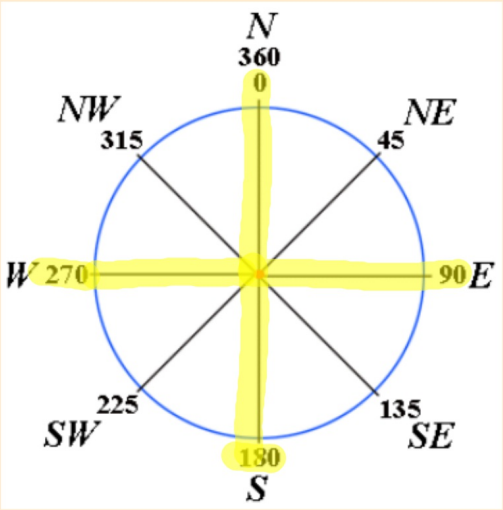
To find the **bearing of A from B**, we place ourselves at point B, face north, then turn clockwise until we face A.





F **BEARINGS**

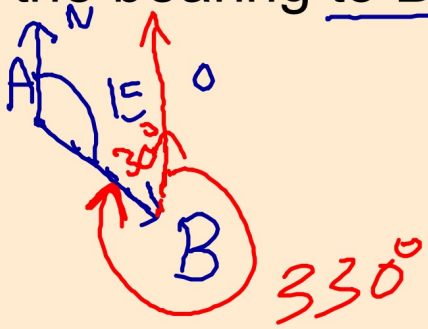
Degrees of Rotation

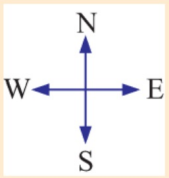


F True Bearing **BEARINGS**

Example 1: Drawing bearings

1) Draw the bearing to B from A: 150°





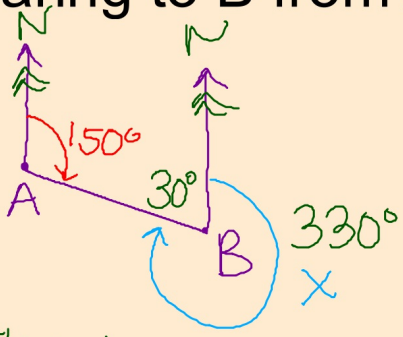
2) Find the bearing to A from B.

330°

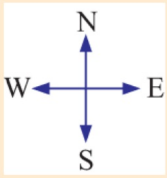
F True Bearing **BEARINGS**

Example 1: Drawing bearings

1) Draw the bearing to B from A: 150°



The bearing of A from B is 330° (if B from A is 150°)

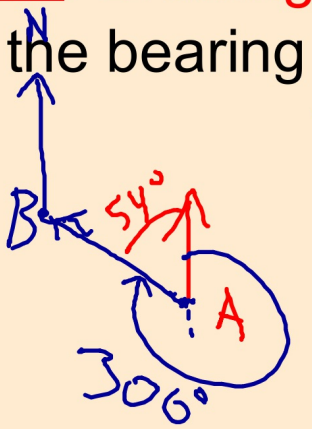


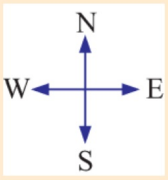
F True Bearing **BEARINGS**

Example 2: Drawing bearings

1) Draw the bearing to B from A: 306°

360 − 306 = 54





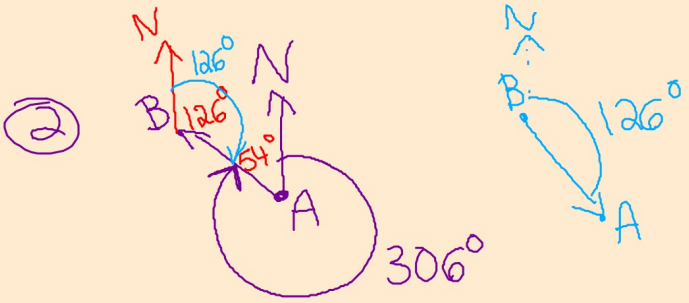
2) Find the bearing to A from B.

180 − 54 = 126°

306 − 180 = 126°

F True Bearing BEARINGS

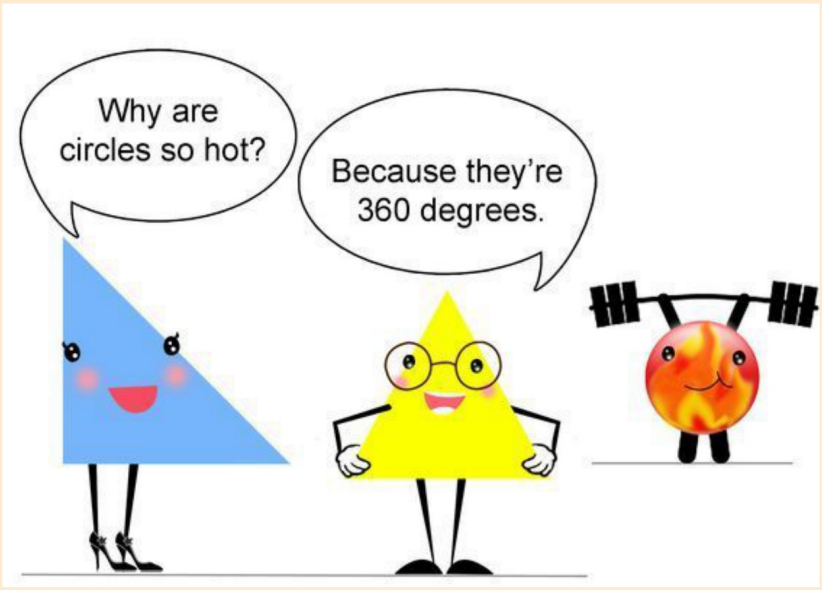
1) Draw the bearing to B from A: 306°



2) Find the bearing to A from B.

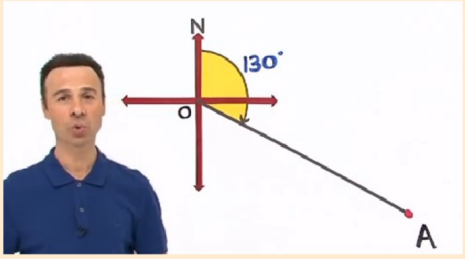
126°

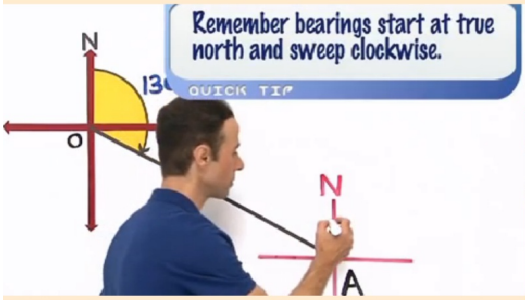
Joke Break!

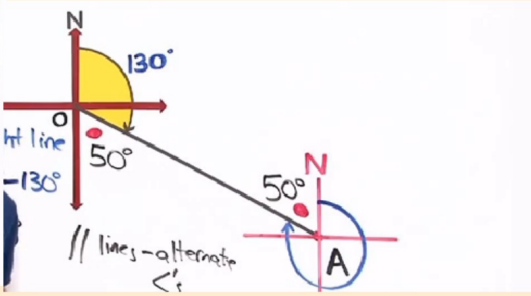


F Video Resources for Bearings BEARINGS

[Example of drawing and finding a bearing. (7+ min)](https://www.youtube.com/watch?v=mMrf1Wn6-XA)
https://www.youtube.com/watch?v=mMrf1Wn6-XA



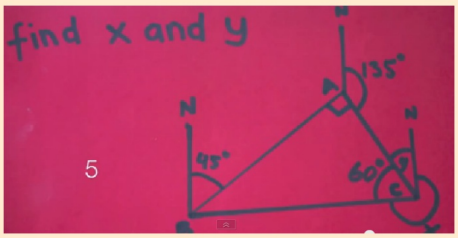


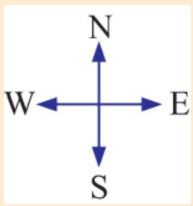


F Video Resources for Bearings BEARINGS

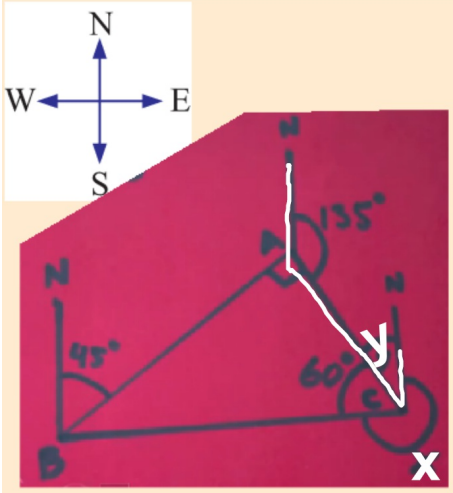
Bearings: Tutorial and Explanation (2+ mins)
https://www.youtube.com/watch?v=D7zL3botUG0

*Pause at 2:01 to practice!





F Video Resources for Bearings BEARINGS



$x + 135^\circ = 180^\circ$

$x = 45^\circ$

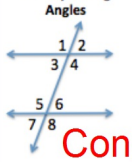
$x = 360^\circ - 60^\circ - 45^\circ$

$x = 255^\circ$

F Geometric Relationships: BEARINGS

Used to calculate bearings

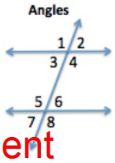
Corresponding Angles



Examples:
∠1 and ∠5
∠2 and ∠6
∠3 and ∠7
∠4 and ∠8

Congruent

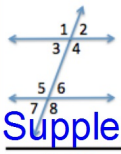
Alternate Interior Angles



Examples:
∠3 and ∠6
∠4 and ∠5

Congruent

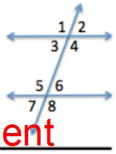
Consecutive Interior Angles



Examples:
∠3 and ∠5
∠4 and ∠6

Supplementary

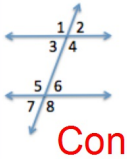
Alternate Exterior Angles



Examples:
∠1 and ∠8
∠2 and ∠7

Congruent

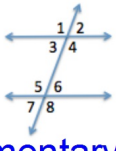
Vertical Angles



Examples:
∠1 and ∠4
∠2 and ∠3
∠5 and ∠8
∠6 and ∠7

Congruent

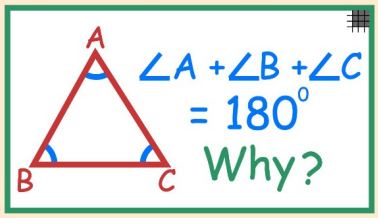
Linear Pair Angles

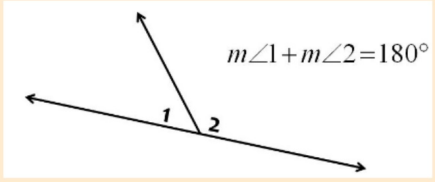


Examples:
∠1 and ∠2
∠2 and ∠4
∠3 and ∠4
∠3 and ∠1
∠5 and ∠6
∠6 and ∠8
∠8 and ∠7
∠7 and ∠5

Supplementary

Supplementary - add to 180 degrees

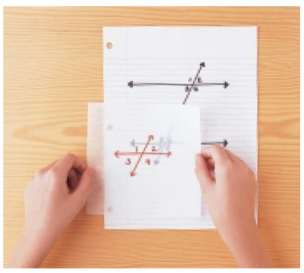


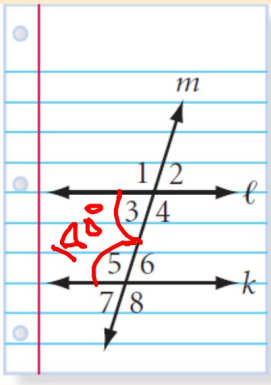


F BEARINGS

Which Angles Are Congruent?

Place a piece of patty paper over the set of angles 1, 2, 3, and 4. Copy the two intersecting lines m and ℓ and the four angles onto the patty paper.





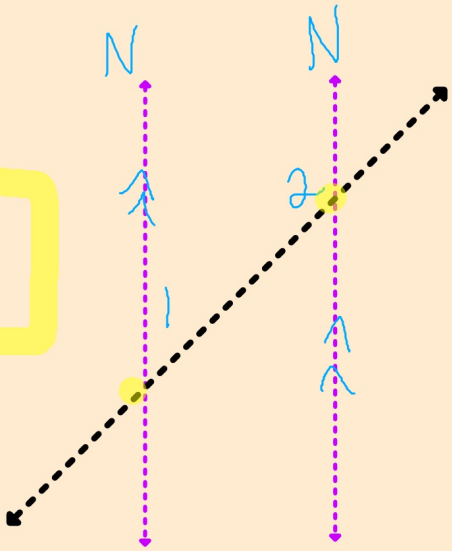
Corresponding Angles, Alternate Interior Angles, Alternate Exterior Angles are equal in measure.

Linear Pairs, Same Side Interior Angles, Same Side Exterior Angles add to 180 degrees.

F BEARINGS

angle 1 and 2...
sum of 180

$m\angle 1 + m\angle 2 = 180^\circ$

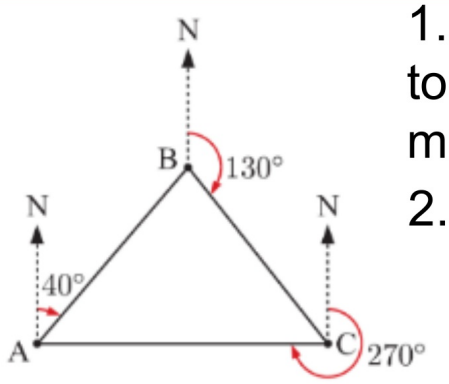


F BEARINGS

3 A, B, and C are checkpoints in an orienteering course. For each of the following, find the bearing of:

i B from A
ii C from B
iii B from C
iv C from A
v A from B
vi A from C.

a



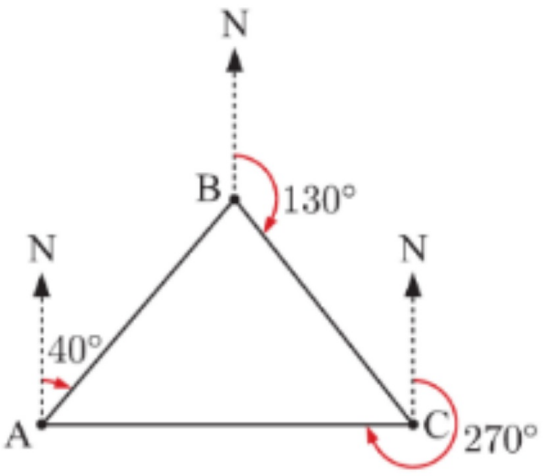
1. Use triangle properties to fill in all missing angle measurements.
2. Solve for Bearings.

3 A, B, and C are checkpoints in an orienteering course. For each of the following, find the bearing of:

i B from A 040° **iii** C from B **v** B from C

ii C from A **iv** A from B **vi** A from C.

a

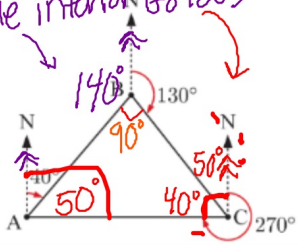


3 A, B, and C are checkpoints in an orienteering course. For each of the following, find the bearing of:

i B from A **ii** C from B **iii** B from C

iv C from A **v** A from B **vi** A from C.

a Same side interior (add to 180°)



$360° = 140° + 130° + x$

$360° = 270° + x$

i. 040°

ii. 130°

iii. $270° + 40° = 310°$

iv. $40° + 50° = 90°$

v. $130° + 90° = 220°$

vi. 270°

"to B from A"

3 a **i** 040° **ii** 130° **iii** 310° **iv** 090° **v** 220° **vi** 270°

Exercises....

Textbook:13F Page 266 (1 - 5)

1) I am building confidence.

(1 - 3)

2) I am somewhat confident.

(1 - 4)

3) I am extremely confident.

(1 - 5)

Exercises....

Textbook:13F Page 265 (1 - 4, 5)

EXERCISE 13F

1 Draw diagrams to represent bearings from O of:

a 055° **b** 140° **c** 330° **d** 255°

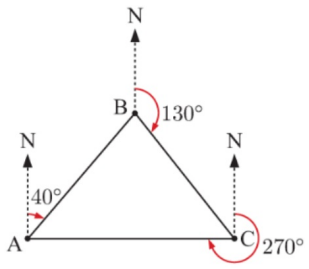
2 Find the bearing of Q from P if the bearing of P from Q is:

a 124° **b** 068° **c** 244° **d** 321°

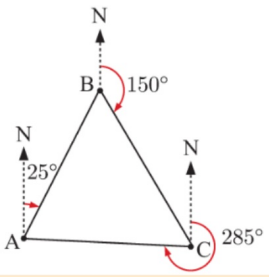
3 A, B, and C are checkpoints in an orienteering course. For each of the following, find the bearing of:

i B from A **ii** C from B **iii** B from C
iv C from A **v** A from B **vi** A from C.

a



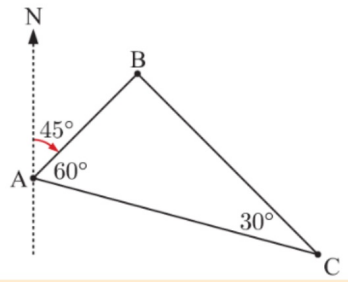
b



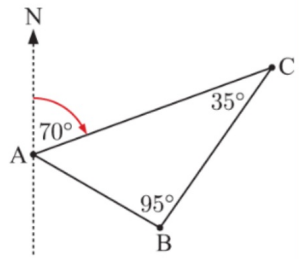
4 For each of the following, find the bearing of:

i B from A **ii** A from B **iii** C from A
iv A from C **v** C from B **vi** B from C.

a

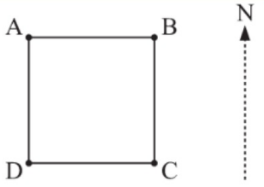


b



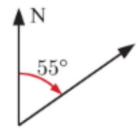
5 The centre of a large city is a square oriented as shown. State the compass bearing and true bearing of:

a B from A **b** C from A **c** D from A
d A from B **e** D from B **f** A from C
g B from C **h** B from D.

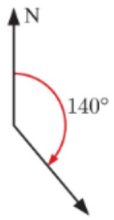


EXERCISE 13F

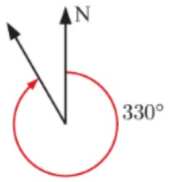
1 **a**



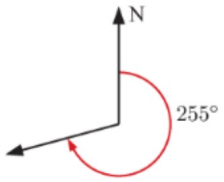
b



c



d



2 **a** 304° **b** 248° **c** 064° **d** 141°

3 **a** **i** 040° **ii** 130° **iii** 310° **iv** 090° **v** 220° **vi** 270°

b **i** 025° **ii** 150° **iii** 330° **iv** 105° **v** 205° **vi** 285°

F Solutions to exercises BEARINGS

4 **a** **i** 045° **ii** 225° **iii** 105° **iv** 285° **v** 135° **vi** 315°

b **i** 120° **ii** 300° **iii** 070° **iv** 250° **v** 035° **vi** 215°

5 **a** east, 090° **b** southeast, 135° **c** south, 180°
d west, 270° **e** southwest, 225° **f** northwest, 315°
g north, 0° **h** northeast, 045°

6 **a** ≈ 2.24 km, 063° **b** ≈ 3.16 km, 162°
c ≈ 3.16 km, 072° **d** ≈ 4.47 km, 207°
e ≈ 3.61 km, 304°

7 236° **8** **a** ≈ 55.0 m **b** ≈ 40.0 m

9 ≈ 14.3 km **10** 650 km