LESSON MAKER PRO

Turn It Around

Convert angles and find their matching turns.

HIGH SCHOOL · MA.912.T.2.1

MA.912.T.2.1 "Given any positive or negative angle measure in degrees or radians, identify its corresponding angle measure between 0° and 360° or between 0 and 2π. Convert between degrees and radians."

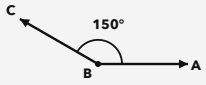
NAME _____ DATE _____

FULL TURNS AND CONVERSIONS

To find a corresponding angle, add or subtract full turns, 360° or 2π, until the measure is in the requested interval. Convert degrees to radians by multiplying by π/180. Convert radians to degrees by multiplying by 180/π.

WORKED EXAMPLE

Use the angle shown. Write its measure in radians between 0 and 2π.

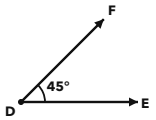


1. The angle measure is 150°.
2. Multiply by π/180.
3. 150° × π/180° = 5π/6.

Answer: 5π/6 radians

PRACTICE 6 problems

1 Use the angle shown. Write its measure in radians.



ANSWER _____

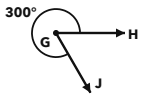
2 Find the corresponding angle measure between 0° and 360° for -510°.

ANSWER _____

3 Convert 7π/6 radians to degrees.

ANSWER _____

4 Use the angle shown. Write its measure in radians.



ANSWER _____

5 Find the corresponding angle measure between 0 and 2π for -13π/4 radians.

ANSWER _____

6 Find the corresponding angle measure between 0° and 360° for 1080°.

ANSWER _____

APPLY IT Show your work

1 At a robotics club, Jordan programs a camera mount to rotate -765° from its starting direction. What is the corresponding positive rotation in radians between 0 and 2π?

WORK SPACE

ANSWER _____

2 While editing a dance video, Mei sets a spinning graphic to turn 11π/3 radians from its start. What is the corresponding angle in degrees between 0° and 360°?

WORK SPACE

ANSWER _____

CHALLENGE One step up

An angle is -25π/6 radians. Find its corresponding angle between 0 and 2π, then convert that angle to degrees. Explain how you chose the number of full turns.

WORK SPACE AND ANSWER

ANSWER KEY

Turn It Around

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the angle shown. Write its measure in radians.	**π/4 radians**
2	Find the corresponding angle measure between 0° and 360° for -510°.	**210°**
3	Convert 7π/6 radians to degrees.	**210°**
4	Use the angle shown. Write its measure in radians.	**5π/3 radians**
5	Find the corresponding angle measure between 0 and 2π for -13π/4 radians.	**3π/4 radians**
6	Find the corresponding angle measure between 0° and 360° for 1080°.	**0°**

PART 2 · APPLY IT

1. **7π/4 radians** Add 1080° to -765° to get 315°. Convert 315° to radians: 315° × π/180° = 7π/4.
2. **300°** Subtract 2π from 11π/3 to get 5π/3. Convert 5π/3 to degrees: 5π/3 × 180/π = 300°.

CHALLENGE

11π/6 radians, 330°. Add 6π, which is three full turns: -25π/6 + 36π/6 = 11π/6. Then 11π/6 × 180/π = 330°.

Accept equivalent exact radian forms that are in the requested interval. Do not accept decimal approximations when an exact answer is requested.