

Star Matter Loop

Follow recycled matter through a massive star's path.

8.9.A "describe the life cycle of stars and compare and classify stars using the Hertzsprung- Russell diagram;"

NAME _____

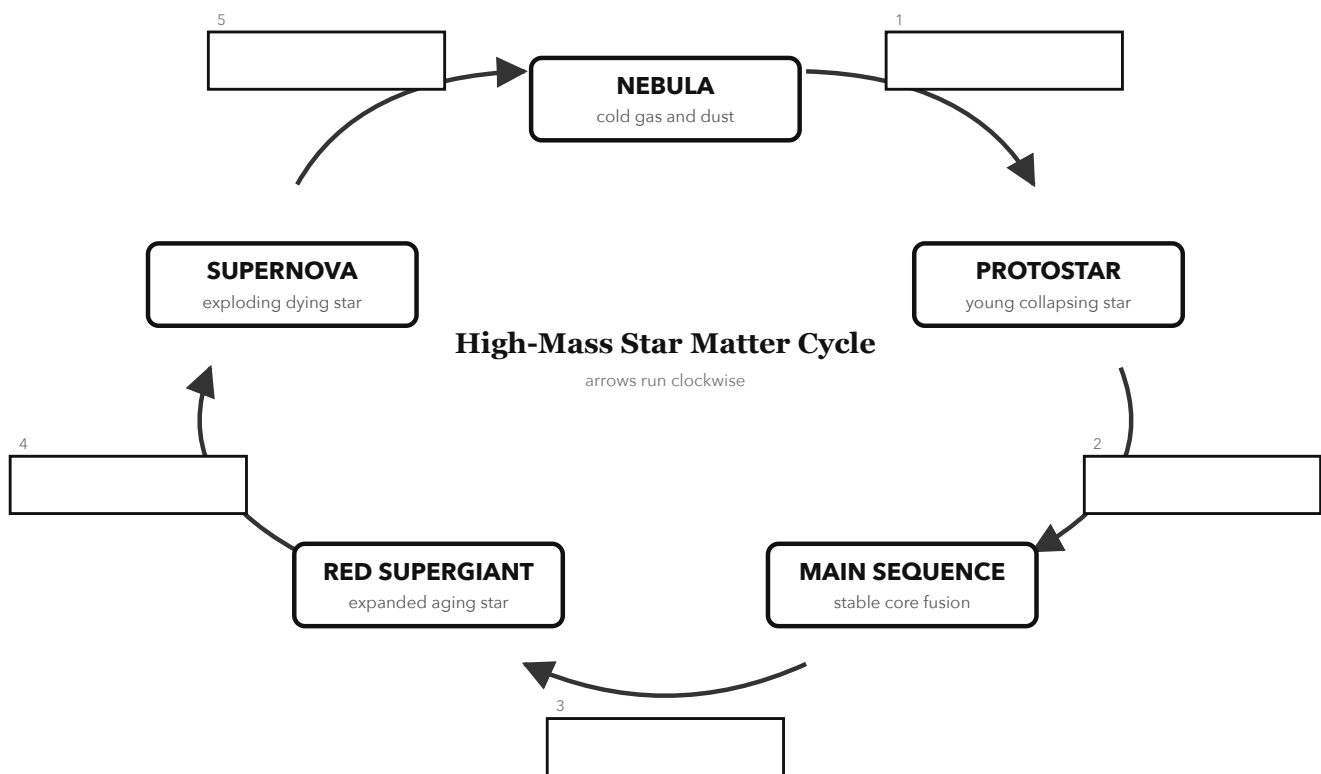
DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one process from the word bank in each numbered box. Use each process once to show how matter moves from one stage to the next.

WORD BANK

- core collapse triggers blast
- core hydrogen runs low
- fusion starts in core
- gas and dust cool and mix
- gravity causes collapse



2 RUN THE MODEL _____ Use your finished diagram

1 Which process moves a protostar into the main sequence stage?

2 After a supernova, what happens to gas and dust before they become part of a nebula again?

3 What are the next two stages after the main sequence stage?

3 CHECK IT _____ Before you turn it in

☐ I used each word-bank process once.

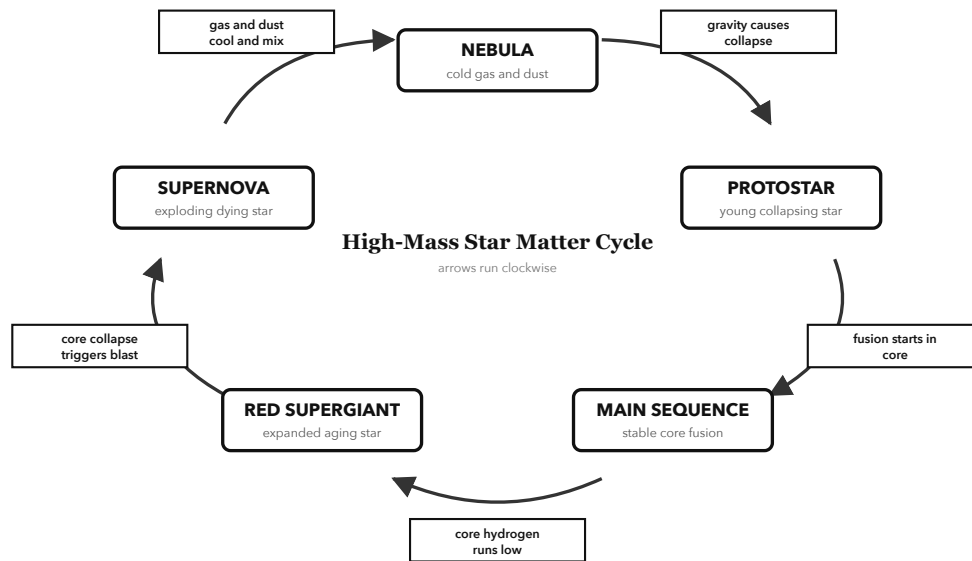
☐ I checked that every arrow leads to the next stage.

☐ I can explain how matter returns to a nebula.

TEST THE MODEL

What important part of a real high-mass star's life cycle does this model leave out?

PART 1 • COMPLETED MODEL



PART 2 • RUN THE MODEL

1. **fusion starts in core** (Which process moves a protostar into the main sequence stage?)
2. **They cool and mix.** (After a supernova, what happens to gas and dust before they become part of a nebula again?)
3. **Red supergiant, then supernova.** (What are the next two stages after the main sequence stage?)

TEST THE MODEL (SAMPLE ANSWERS)

- Some massive stars leave neutron stars or black holes, but this model does not show them.
- It leaves out the lower-mass star path, including red giants and planetary nebulae.

Correct arrow order: gravity causes collapse; fusion starts in core; core hydrogen runs low; core collapse triggers blast; gas and dust cool and mix. This simplified loop tracks recycled matter in the high-mass star path.