BIG FLOOR PLANS · COLLEGE & TRADES TRACK · 45 MINUTES

Place the Smoke Alarms: teacher script

Fire-science and electrical students check a proposed smoke alarm layout on the Teaching House plan against the code locations, measure the bathroom-door distance at full size, and fix the plan.

Prep: Roll out the TP-01 print, or tape the three bedrooms, the baths and the hall. Place paper discs at the four proposed locations. Print one check sheet per team.

Min	Step and what to do	Ask	Listen for
0-5	**Hook** "Four alarms on the plan. Is that enough, and are they in the right places?"	Where do people need to be woken?	Where they sleep.
5-15	**The list** Read the location rules and list the required spots for this one-story house.	How many are required?	4: each bedroom and the hall outside them.
15-30	**Check the layout** Stand at each disc. Name its room; measure to the nearest bathroom door with the 3-ft string.	What is wrong?	No alarm in Bedroom 3; alarm A is 1 ft from a bathroom door.
30-40	**Red-line** Move or add alarms and re-measure.	Where do they go?	Center of Bedroom 2 and Bedroom 3, each about 6 ft from the bath door.
40-45	**Exit ticket** Individual exit ticket.		

Common misconceptions

- **Learners may think:** One alarm in the hall covers the bedrooms. **Address it:** Each sleeping room needs its own alarm, plus one outside them.
- **Learners may think:** Any ceiling spot in the room is fine. **Address it:** Distance from bathroom doors and other rules still apply.

Supports

- Give the rules as a checklist with a picture for each.
- Multilingual learners: label bedroom, hall, story, alarm and bathroom door on the plan.
- Mobility: the inspector can check distances on the paper plan with a scale while a teammate holds the string.

References

- **International Residential Code (IRC)**: R314.3 smoke alarm locations (each sleeping room; outside each separate sleeping area; each story; 3 ft from a bathroom door with a tub or shower); R314.4 interconnection (check the edition your jurisdiction adopted)
- **Perkins V (CTE)**: postsecondary and secondary CTE program context

Scenario sheet

The Teaching House (TP-01), one story on a slab: three bedrooms off one hall, a shared bath between Bedroom 2 and Bedroom 3 (doors into each bedroom) and a primary bath off the primary bedroom; both baths have a tub or shower. Coordinates in feet from the plan's top-left corner (x to the right, y down).

Rules as quoted (IRC R314.3; check your adopted edition): an alarm in each sleeping room; outside each separate sleeping area in the immediate vicinity of the bedrooms; on each story; not less than 3 ft horizontally from the door of a bathroom with a tub or shower. Alarms are interconnected (R314.4).

Proposed alarm	Location (x, y) ft
A	11, 4.5
B	48, 8.5
C	20, 15
D	43, 24.5

LEARNER SHEET · PLACE THE SMOKE ALARMS

Name _____ Date _____

Alarm	Room	Required location?	Distance to nearest bath door (ft)	Pass / fix
A				
B				
C				
D				

Required locations missing: _____ Red-line: add or move _____

Exit ticket

1. A two-story house, 4 bedrooms upstairs off one hall. Minimum alarms upstairs?

2. An alarm is 2 ft from a shower room door. Pass for 3 ft?

3. Does the basement need one?

Answer key

Alarm	Room	Required?	To bath door	Result
A	Bedroom 2	yes	1.0 ft	too close: move it
B	Primary bedroom	yes	8.1 ft	passes
C	Hall	yes	9.1 ft	passes
D	Living room	extra (allowed)	17.2 ft	passes

Required: Bedroom 2, Bedroom 3, Primary bedroom, Hall (4). Missing: Bedroom 3. Fix: move A to the center of Bedroom 2 (6, 6.5), 6 ft from the bath door; add one in Bedroom 3 at (25, 6.5), 6 ft from the bath door. Keep the living room alarm if wanted; interconnect all of them.

Exit ticket

1. A two-story house, 4 bedrooms upstairs off one hall. Minimum alarms upstairs?
   Answer: 5: four bedrooms plus the hall.
2. An alarm is 2 ft from a shower room door. Pass for 3 ft?
   Answer: No: move it at least 1 ft farther.
3. Does the basement need one?
   Answer: Yes: every story, including basements.

Scoring: 1 point each, plus 1 for a complete red-line. 3 or more = secure.

Free to copy for teaching. Big Floor Plans, Place the Smoke Alarms, 2026. Codes and standards change: use the edition your jurisdiction or program adopted. Full-size prints: bigfloorplans.com/get-a-quote