 Dicey test taking

The problem

When taking the test to obtain your learner driver licence, you must answer 45 questions out of a bank of 600 questions. Out of these 45 questions, you must get at least 41 correct.

What are the chances of you passing?

Your investigation

1. Create a model using a dice to represent the chance of you getting a question correct or incorrect eg If you have spent no time studying at all, you may use a score of 1 to represent the chance of you answering a question correctly and 2, 3, 4, 5, and 6 of you answering incorrectly.
2. Record the probability of you answering a question correctly (according to what you decided in question 1).
3. Record the probability of you answering a question incorrectly.
4. Roll the dice 45 times and record whether you answer each question correctly or incorrectly.
5. Record whether you passed or failed your licence test.
6. Conduct the experiment again by repeating steps 1 to 5 and changing which scores represent you answering correctly or incorrectly.

Things to consider:

* + What if I use different scores on the die to represent my correct and incorrect answers? Do I still have the same chance of passing? For example, using 6 to represent my correct answer rather than 1.
  + What are the least number of scores I can have representing a correct answer and still pass the test?

Outcomes

* MA4-2WM applies appropriate mathematical techniques to solve problems
* MA4-3WM recognises and explains mathematical relationships using reasoning
* MA4‑21SP represents probabilities of simple and compound events