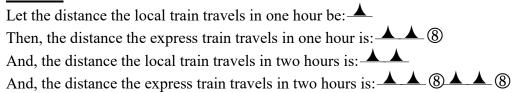# SOLUTIONS FOR DISTANCE PROBLEMS: LEVEL III

35. The average speed of an express train is 8 miles per hour slower than twice the speed of the local train. Both trains leave the same station traveling in opposite directions at the same time. After 2 hours of travel, the trains are 224 miles apart. Find the speed of each train. [III, 25]

<u>Solution</u>:
Let the distance the local train travels in one hour be: ▲
Then, the distance the express train travels in one hour is: ▲ ▲ ⑧
And, the distance the local train travels in two hours is: ▲ ▲
And, the distance the express train travels in two hours is: ▲ ▲ ⑧ ▲ ▲ ⑧

Since the sum of the distances traveled is 224 miles, we have.

$$▲ ▲ \quad ▲ ▲ ⑧ ▲ ▲ ⑧ \perp \boxed{224}$$

$$▲ = 40$$

<u>Answer:</u> The speed of the local train is 40 miles per hour,
and that of the express train 72 miles per hour. Check: 224 = 224.

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36. The average speed of the local train is 10 miles per hour less than half the express train's speed. After 2 hours the express train travels 100 miles more than the local train traveled in one hour. Find the speed of the local train and the speed of the express train. [III, 25]

<u>Solution</u>:
Since we need half the speed of the express train, we will represent the distance the express train travels in one hour by two blue pawns
Let the distance the express train travels in one hour be: ▲ ▲
Then, the distance the local train travels in one hour is: ▲ ⑩
And, the distance the express train travels in two hours is: ▲ ▲ ▲ ▲

Since the express train travels 100 more miles than the local train, we have,

$$▲ ▲ \quad ▲ ▲ \perp ▲ ⑩ \boxed{100}$$

$$▲ = 30$$

<u>Answer:</u> The speed of the local train is 20 miles per hour;
the speed of the express train is 60 miles per hour. Check: 120 = 120.