

***Clinical Calculations 9th edition KeeMarshall Test  
Bank***

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**Chapter 07: Methods of Calculation for Individualized Drug Dosing**  
**Kee: Clinical Calculations: With Applications to General and Specialty Areas, 9th Edition**

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**OTHER**

**Body Surface Area by Square Root**

1. Order: cyclophosphamide 500 mg/m<sup>2</sup> in 500 mL of normal saline solution (NSS) over 90 minutes  
Patient height and weight: 5 ft 10 in, 142 lb  
Drug available: cyclophosphamide 100 mg dilute with 5 mL of sterile water; yields 20 mg/mL
  - a. What is the patient's body surface area (BSA) (m<sup>2</sup>)?
  - b. What is the total dose?
  - c. How many milliliters should you prepare?

ANS:

- a.  $\sqrt{\frac{70 \times 142}{3131}} = 1.78 \text{ m}^2$
- b.  $500 \text{ mg/m}^2 \times 1.78 \text{ m}^2 = 890 \text{ mg}$
- c. FE:  $890 \text{ mg}/100 \text{ mg} \times 5 \text{ mL} = 44.5 \text{ mL}$

**OR**

$$\text{BF: } \frac{D}{H} \times V = \frac{890 \text{ mg}}{100 \text{ mg}} \times 5 \text{ mL} = 44.5 \text{ mL}$$

2. Order: cisplatin 50 mg/m<sup>2</sup> in 500 mL of NSS intravenously over 90 minutes  
Patient height and weight: 5 ft 6 in, 160 lb  
Drug available: cisplatin 100 mg/100 mL
  - a. What is the patient's BSA (m<sup>2</sup>)?
  - b. What is the total dose?
  - c. How many milliliters should you prepare?

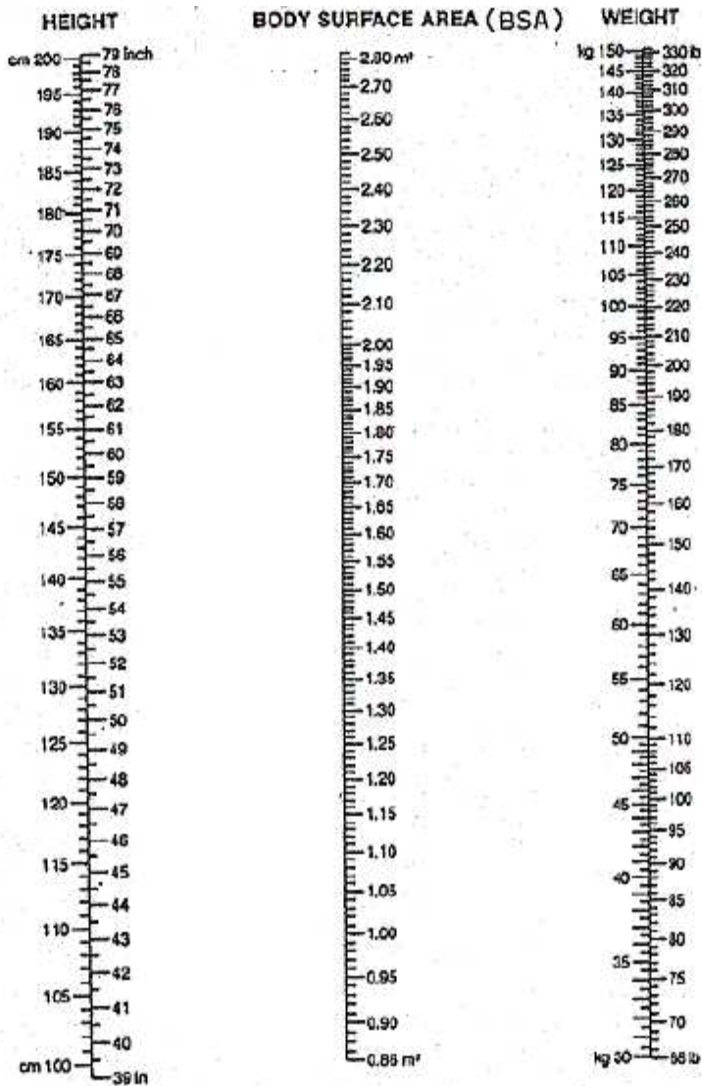
ANS:

- a.  $\sqrt{\frac{66 \times 160}{3131}} = 1.84 \text{ m}^2$
- b.  $50 \text{ mg} \times 1.84 \text{ m}^2 = 92 \text{ mg}$
- c. FE:  $92 \text{ mg}/100 \text{ mg} \times 100 \text{ mL} = 92 \text{ mL}$

**OR**

$$\text{BF: } \frac{D}{H} \times V = \frac{92 \text{ mg}}{100 \text{ mg}} \times 100 \text{ mL} = 92 \text{ mL}$$

3. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give dacarbazine  $250 \text{ mg/m}^2/\text{day} \times 5 \text{ days}$ .

Patient height: 5 ft 10 in

Patient weight: 173 lb

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

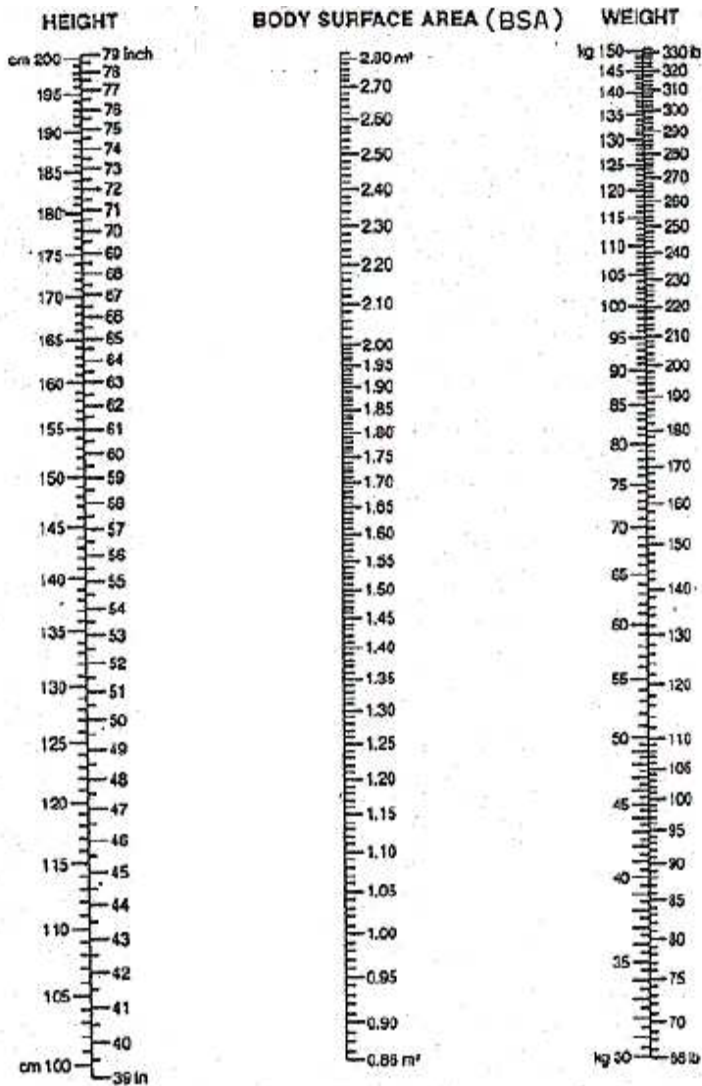
$$\text{a. } \sqrt{\frac{70 \times 173}{3131}} = \sqrt{3.8677} = 1.97 \text{ m}^2$$

$$250 \text{ mg/m}^2/\text{day} \times 1.97 \text{ m}^2 = 493 \text{ mg/day}$$

b. Height 70 in, weight 173 lb, intersects  $2.02 \text{ m}^2$

$$250 \text{ mg/m}^2/\text{day} \times 2.02 \text{ m}^2 = 505 \approx 500 \text{ mg/day}$$

4. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give 5-fluorouracil 450 mg/m<sup>2</sup>/wk.

Patient height: 5 ft 6 in

Patient weight: 210 lb

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

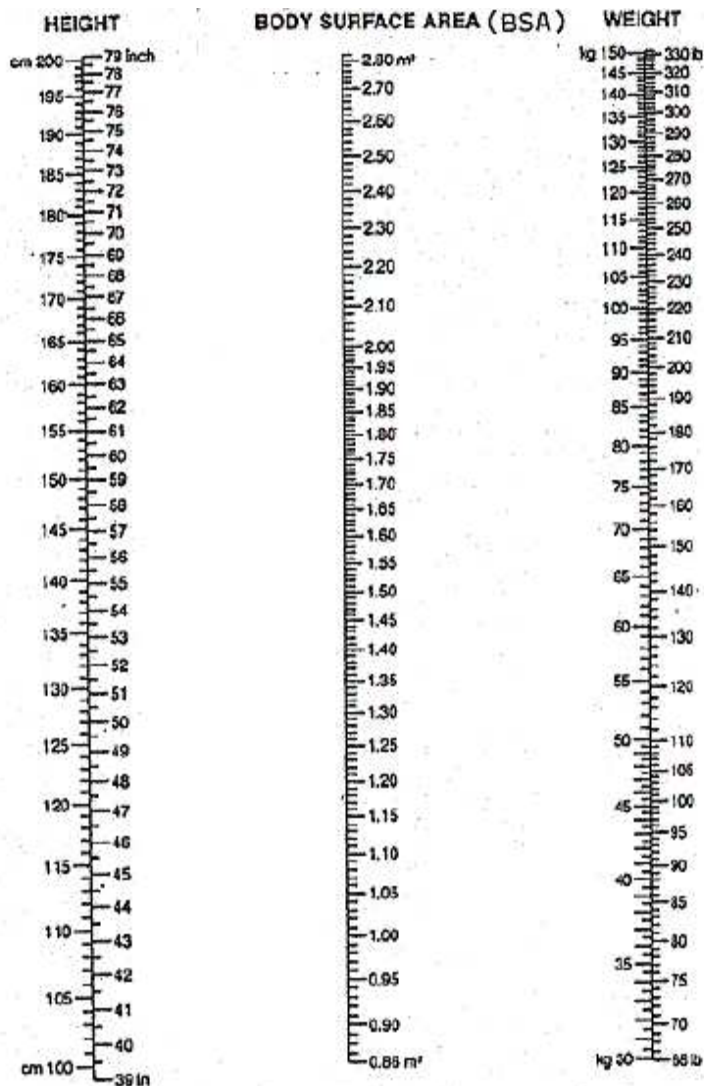
a. 
$$\sqrt{\frac{66 \times 210}{3131}} = \sqrt{4.43} = 2.10 \text{ m}^2$$

450 mg/m<sup>2</sup>/wk × 2.10 m<sup>2</sup> = 945 mg/wk

b. Height 66 in, weight 210 lb, intersects 2.04 m<sup>2</sup>

450 mg/m<sup>2</sup>/wk × 2.04 m<sup>2</sup> = 918 ≈ 920 mg/wk

5. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give leucovorin 200 mg/m<sup>2</sup>/wk.

Patient height: 5 ft 6 in

Patient weight: 210 lb

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

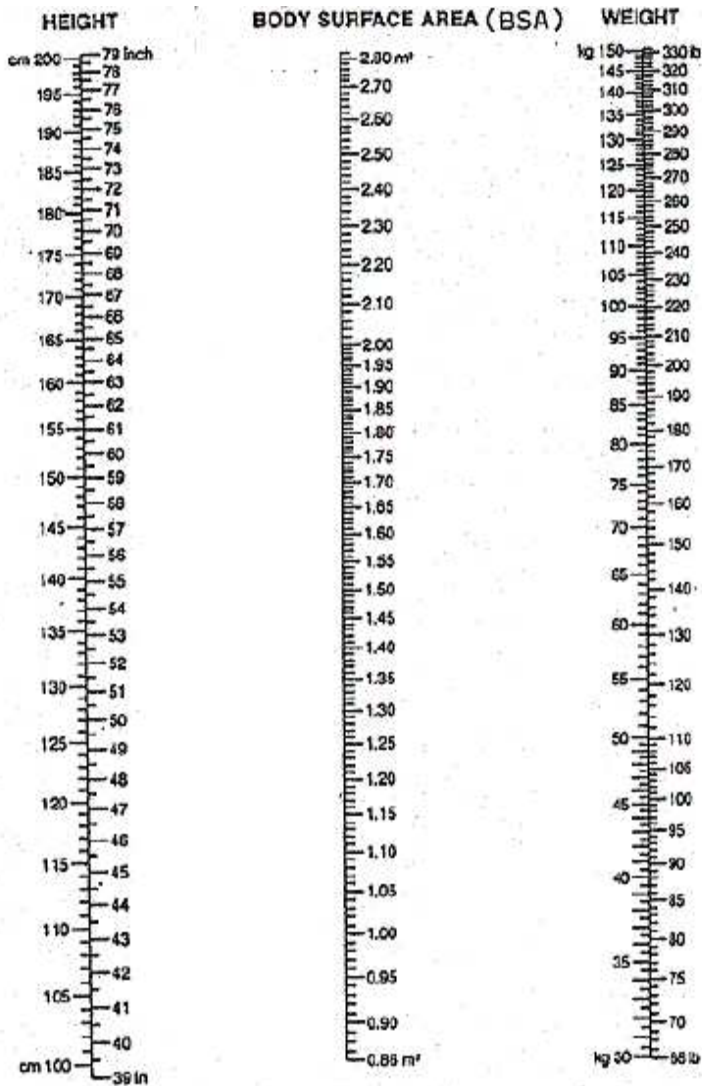
$$a. \sqrt{\frac{66 \times 210}{3131}} = \sqrt{4.43} = 2.10 \text{ m}^2$$

$$200 \text{ mg/m}^2/\text{wk} \times 2.10 \text{ m}^2 = 420 \text{ mg/wk}$$

b. Height 66 in, weight 210 lb, intersects 2.04 m<sup>2</sup>

$$200 \text{ mg/m}^2/\text{wk} \times 2.04 \text{ m}^2 = 408.00 \approx 400 \text{ mg/wk}$$

6. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give cisplatin  $30 \text{ mg/m}^2/\text{day} \times 3 \text{ days}$ .

Patient height: 70 in

Patient weight: 80 kg

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

a.  $80 \text{ kg} \times 2.2 = 176 \text{ lb}$

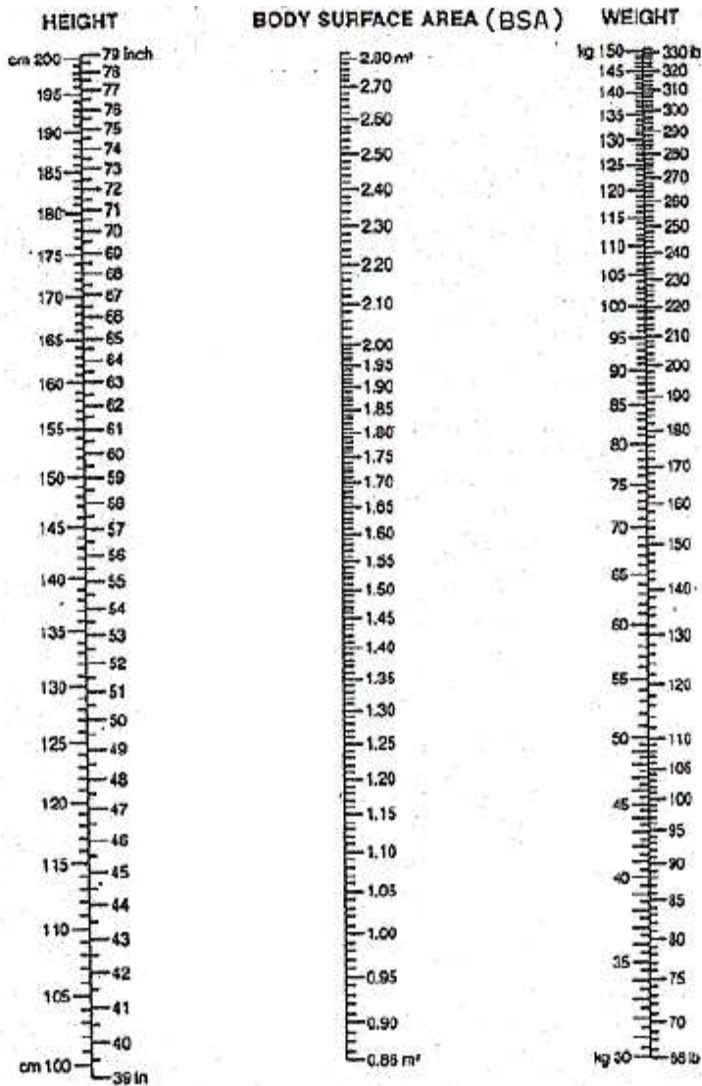
$$\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98 \text{ m}^2$$

$$30 \text{ mg/m}^2/\text{day} \times 1.98 \text{ m}^2 = 59.4 \approx 59 \text{ mg/day}$$

b. Height 70 in, weight 80 kg, intersects  $2.08 \text{ m}^2$

$$30 \text{ mg/m}^2/\text{day} \times 2.08 \text{ m}^2 = 62.4 \approx 62 \text{ mg/day}$$

7. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give cisplatinum 80  $mg/m^2/wk$ .

Patient height: 6 ft 2 in

Patient weight: 186 lb

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

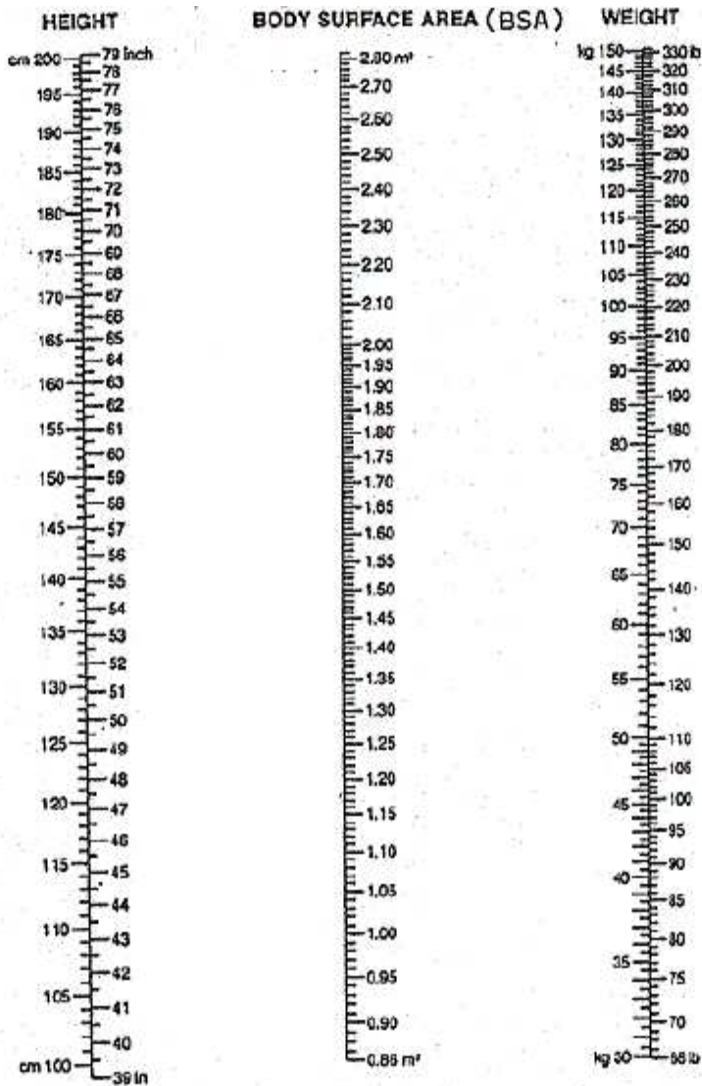
$$a. \sqrt{\frac{74 \times 186}{3131}} = \sqrt{4.39} = 2.09 m^2$$

$$80 mg/m^2/wk \times 2.09 m^2 = 167.2 mg/wk$$

b. Height 74 in, weight 186 lb, intersects 2.10  $m^2$

$$80 mg/m^2/wk \times 2.10 m^2 = 168 \approx 170 mg/wk$$

8. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give etoposide 120 mg/m<sup>2</sup>/wk.

Patient height: 74 in

Patient weight: 70 kg

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

a.  $70 \text{ kg} \times 2.2 = 154 \text{ lb}$

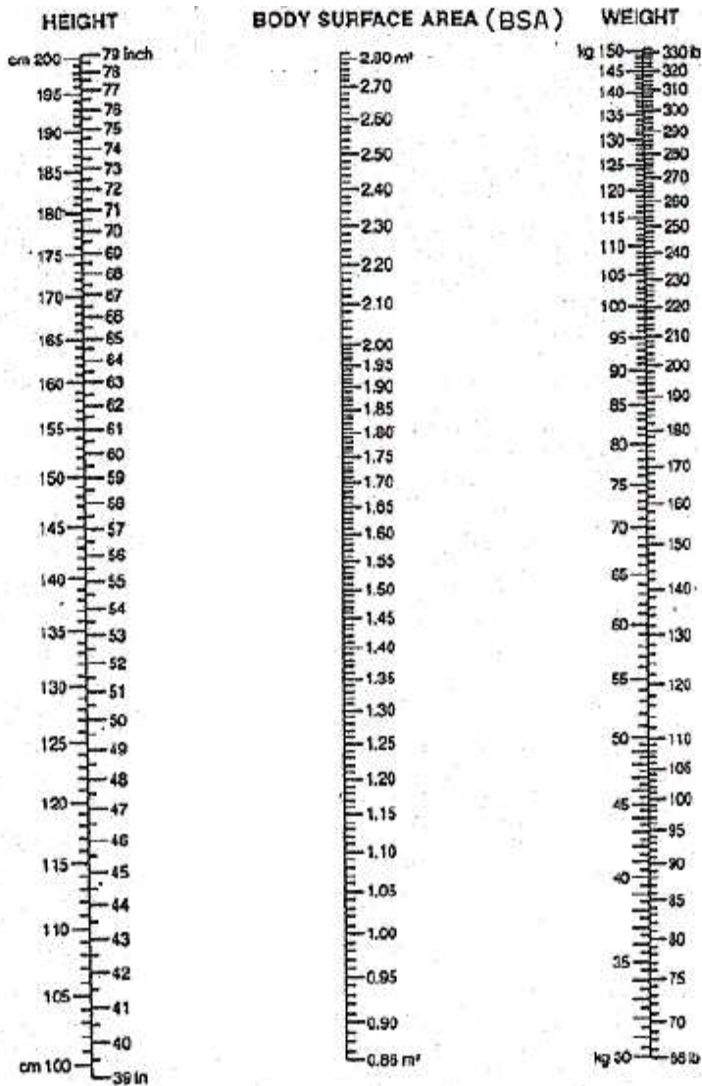
$$\sqrt{\frac{74 \times 154}{3131}} = \sqrt{3.639} = 1.91 \text{ m}^2$$

$$120 \text{ mg/m}^2/\text{wk} \times 1.91 \text{ m}^2 = 229.2 \text{ mg/wk}$$

b. Height 74 in, weight 70 kg, intersects 2.06 m<sup>2</sup>

$$120 \text{ mg/m}^2/\text{wk} \times 2.06 \text{ m}^2 = 247.2 \approx 250 \text{ mg/wk}$$

9. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give Cytosan 600 mg/m<sup>2</sup>/wk.

Patient height: 70 in

Patient weight: 85 kg

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

a.  $85 \text{ kg} \times 2.2 = 187 \text{ lb}$

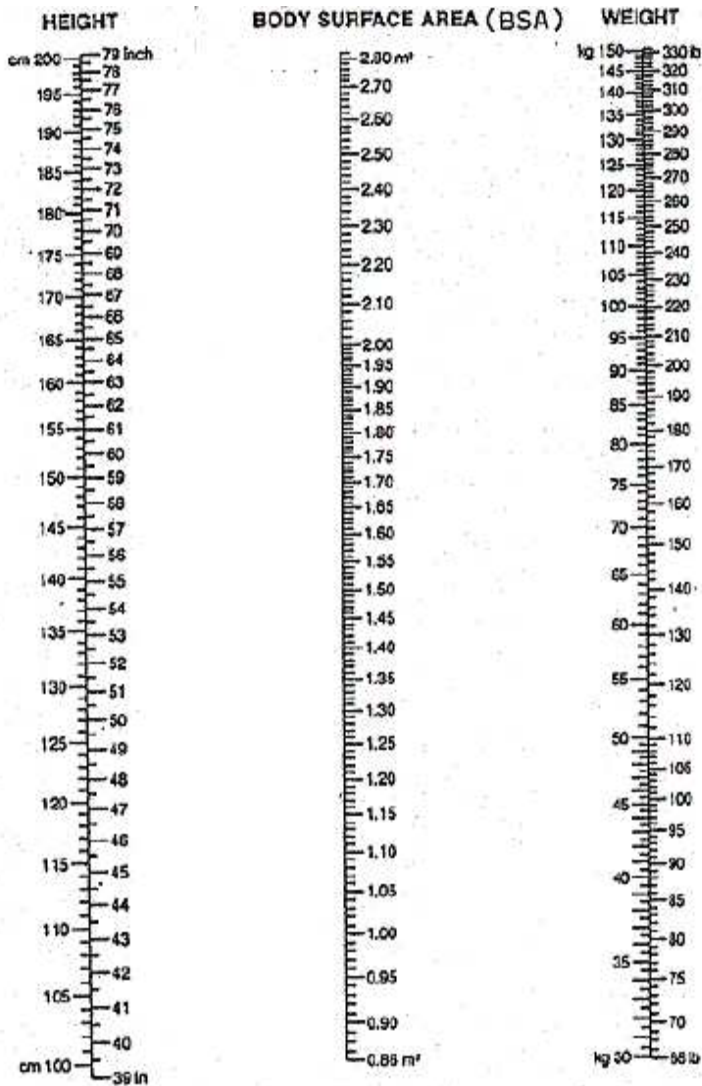
$$\sqrt{\frac{70 \times 187}{3131}} = \sqrt{4.18} = 2.04 \text{ m}^2$$

$600 \text{ mg/m}^2/\text{wk} \times 2.04 \text{ m}^2 = 1224 \text{ or } 1225 \text{ mg/wk}$

b. Height 70 in, weight 85 kg, intersects 2.08 m<sup>2</sup>

$600 \text{ mg/m}^2/\text{wk} \times 2.08 \text{ m}^2 = 1248 \approx 1250 \text{ mg/wk}$

10. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give Adriamycin 60 mg/m<sup>2</sup>/wk.

Patient height: 70 in

Patient weight: 80 kg

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

a.  $80 \text{ kg} \times 2.2 = 176 \text{ lb}$

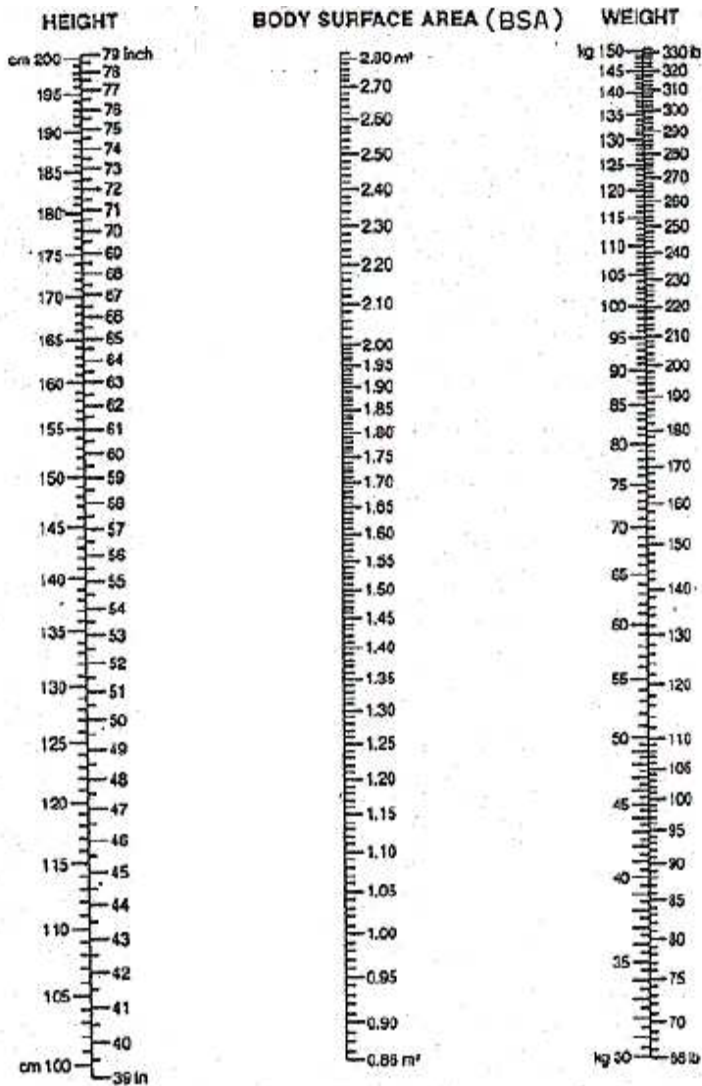
$$\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98 \text{ m}^2$$

$$60 \text{ mg/m}^2/\text{wk} \times 1.98 \text{ m}^2 = 118.8 \text{ mg/wk} = 119 \text{ mg/wk}$$

b. Height 70 in, weight 80 kg, intersects 2.04 m<sup>2</sup>

$$60 \text{ mg/m}^2/\text{wk} \times 2.04 \text{ m}^2 = 122.4 \text{ mg/wk}$$

11. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give vincristine 2 mg/m<sup>2</sup>/week.

Patient height: 62 in

Patient weight: 75 kg

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

a.  $75 \text{ kg} \times 2.2 = 165 \text{ lb}$

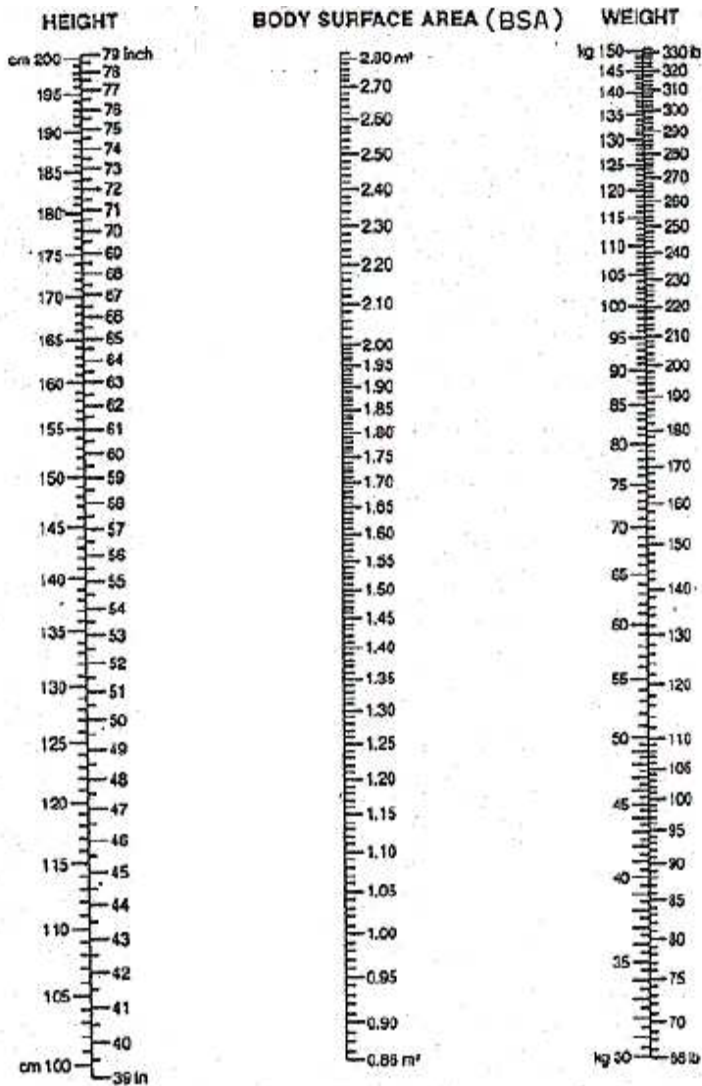
$$\sqrt{\frac{62 \times 165}{3131}} = \sqrt{3.27} = 1.81 \text{ m}^2$$

$$2 \text{ mg/m}^2/\text{wk} \times 1.81 \text{ m}^2 = 3.62 = 3.6 \text{ mg/wk}$$

b. Height 62 in, weight 75 kg, intersects 1.78 m<sup>2</sup>

$$2 \text{ mg/m}^2/\text{wk} \times 1.78 \text{ m}^2 = 3.56 \approx 3.6 \text{ mg/wk}$$

12. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give mitomycin 15 mg/m<sup>2</sup>/week.

Patient height: 65 in

Patient weight: 64 kg

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

a.  $64 \text{ kg} \times 2.2 = 140.8$  or 141 lb

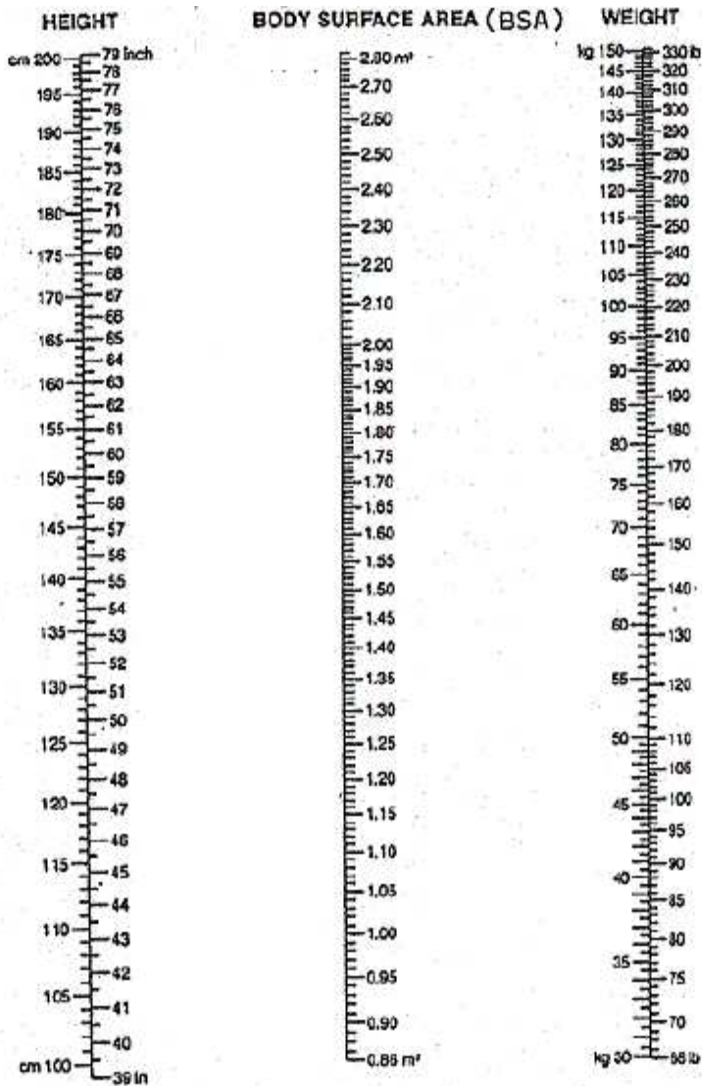
$$\sqrt{\frac{65 \times 141}{3131}} = \sqrt{2.93} = 1.71 \text{ m}^2$$

$15 \text{ mg/m}^2/\text{wk} \times 1.71 \text{ m}^2 = 25.6$  or 26 mg/wk

b. Height 65 in, weight 64 kg, intersects 1.75 m<sup>2</sup>

$15 \text{ mg/m}^2/\text{wk} \times 1.75 \text{ m}^2 = 26.25 \approx 26 \text{ mg/wk}$

13. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give mitoxantrone  $12 \text{ mg/m}^2/\text{day} \times 3 \text{ days}$ .

Patient height: 5 ft 8 in

Patient weight: 150 lb

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

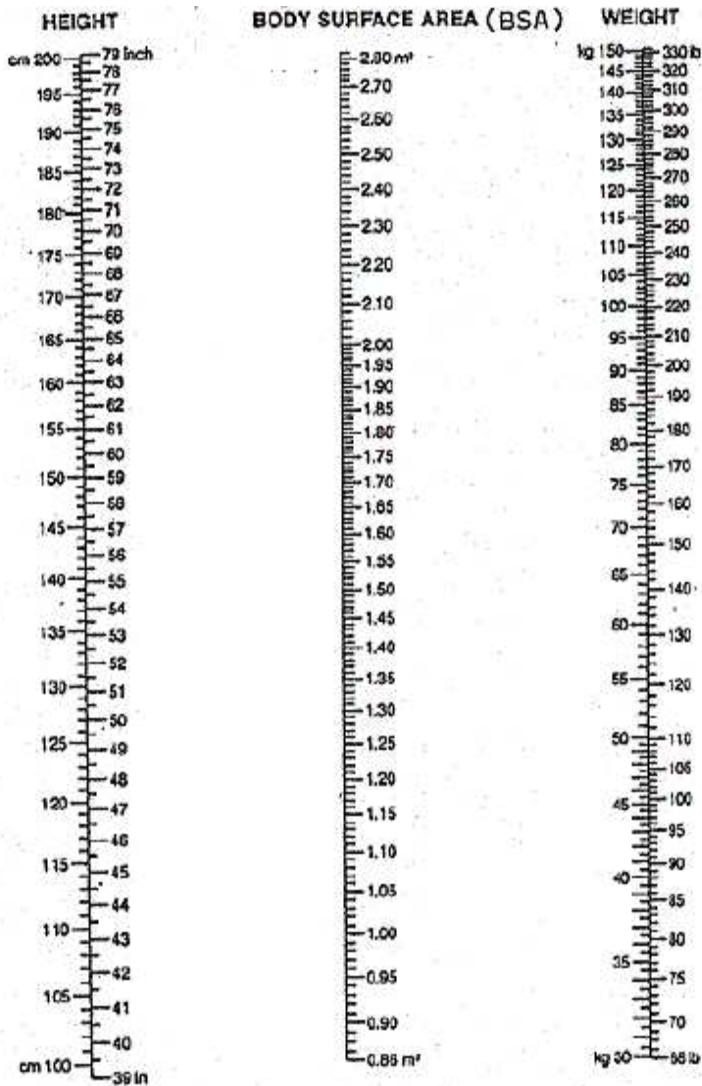
$$\text{a. } \sqrt{\frac{68 \times 150}{3131}} = \sqrt{3.25} = 1.8 \text{ m}^2$$

$$12 \text{ mg/m}^2/\text{day} \times 1.80 \text{ m}^2 = 21.6 \text{ or } 22 \text{ mg/day}$$

b. Height 68 in, weight 150 lb, intersects  $1.85 \text{ m}^2$

$$12 \text{ mg/m}^2/\text{day} \times 1.85 \text{ m}^2 = 22.2 \approx 22 \text{ mg/day}$$

14. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give cytosine arabinoside  $100 \text{ mg/m}^2/\text{day} \times 7 \text{ days}$ .

Patient height: 5 ft 2 in

Patient weight: 130 lb

What is the weekly dose with

a. square root method?

b. nomogram?

ANS:

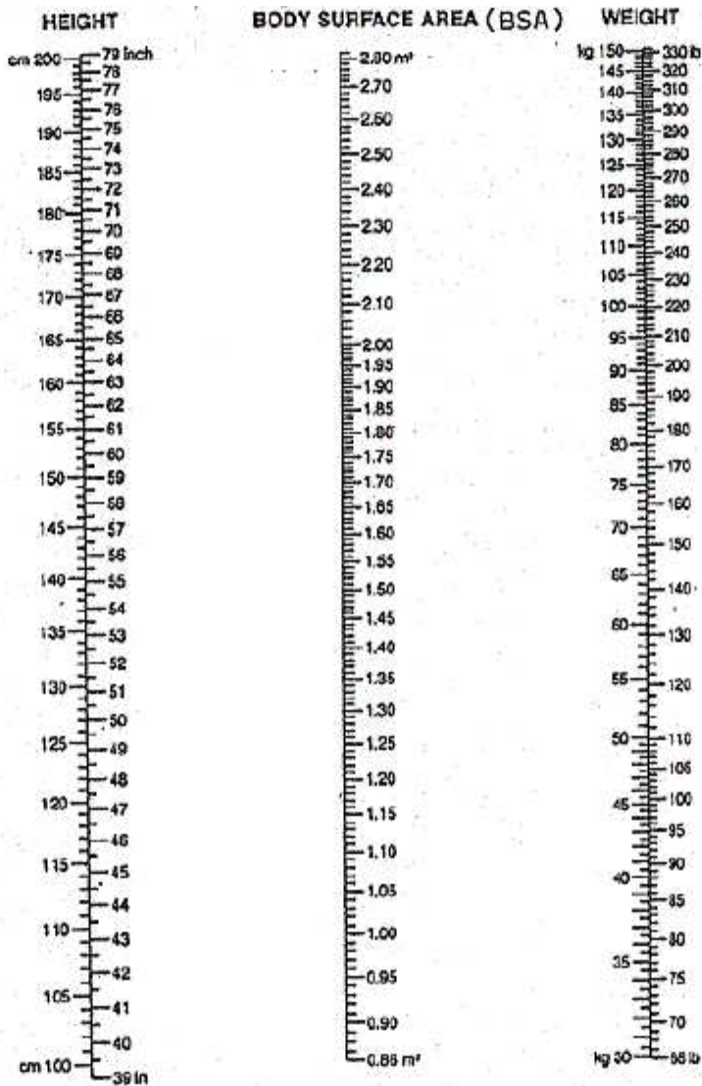
a.  $\sqrt{\frac{62 \times 130}{3131}} = \sqrt{2.57} = 1.6 \text{ m}^2$

$100 \text{ mg/m}^2/\text{day} \times 1.6 \text{ m}^2 = 160 \text{ mg/day}$

b. Height 62 in, weight 130 lb, intersects  $1.65 \text{ m}^2$

$100 \text{ mg/m}^2/\text{day} \times 1.65 \text{ m}^2 = 165 \text{ mg/day}$

15. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give methotrexate  $3.3 \text{ mg/m}^2/\text{day} \times 7 \text{ days}$ .

Patient height: 72 in

Patient weight: 82 kg

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

a.  $82 \text{ kg} \times 2.2 = 180.4 \text{ lb}$

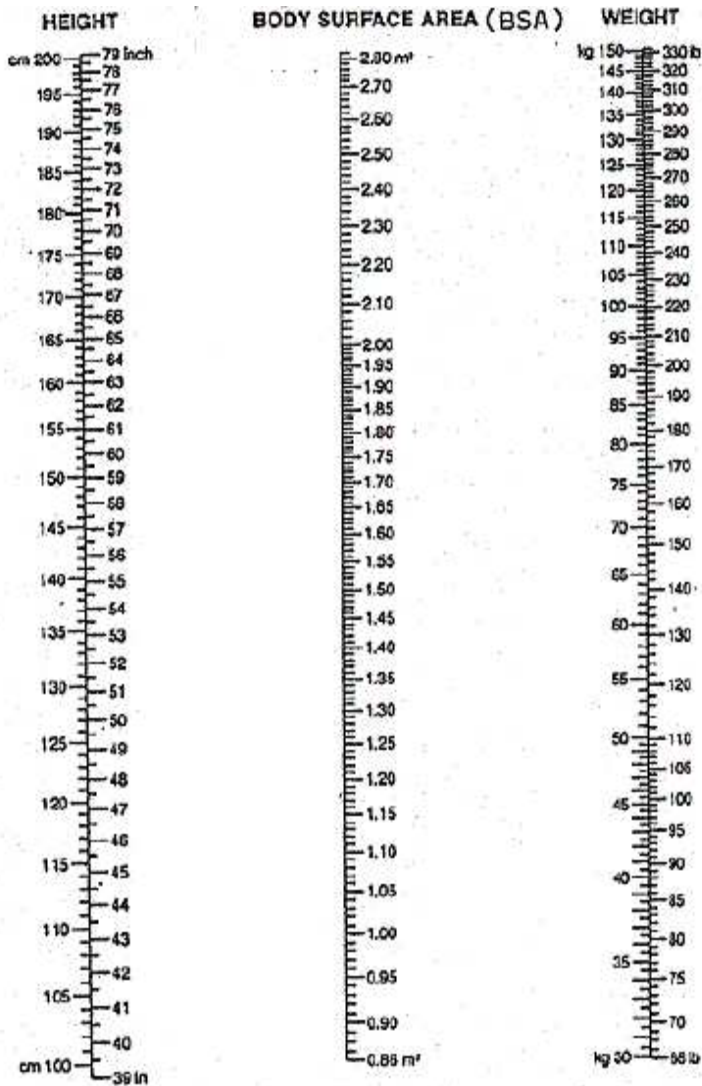
$$\sqrt{\frac{72 \times 180.4}{3131}} = \sqrt{4.15} = 2.04 \text{ m}^2$$

$$3.3 \text{ mg/m}^2/\text{day} \times 2.04 \text{ m}^2 = 6.7 \text{ mg/day}$$

b. Height 72 in, weight 82 kg, intersects 2.10 m<sup>2</sup>

$$3.3 \text{ mg/m}^2/\text{day} \times 2.10 \text{ m}^2 = 6.93 \approx 6.9 \text{ mg/day}$$

16. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give prednisone  $60 \text{ mg/m}^2/\text{day} \times 7 \text{ days}$ .

Patient height: 72 in

Patient weight: 84 kg

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

a.  $84 \text{ kg} \times 2.2 = 184.8$  or 185 lb

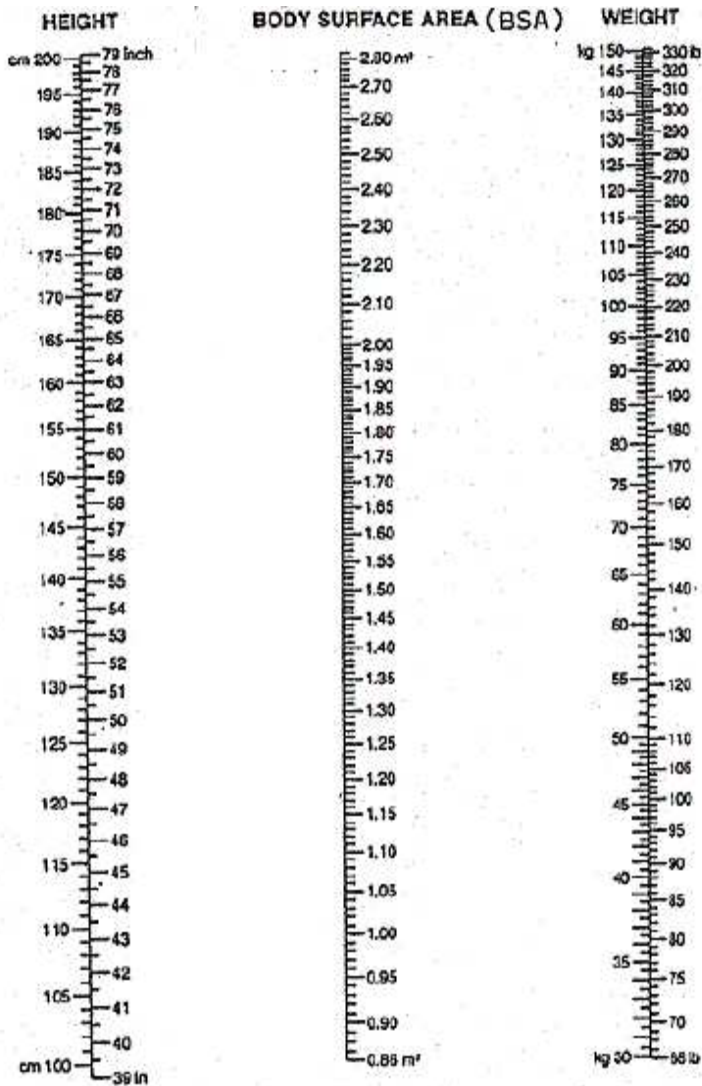
$$\sqrt{\frac{72 \times 185}{3131}} = \sqrt{4.25} = 2.06 \text{ m}^2$$

$60 \text{ mg/m}^2/\text{day} \times 2.06 \text{ m}^2 = 123.6$  or 124 mg/day

b. Height 72 in, weight 84 kg, intersects  $2.10 \text{ m}^2$

$60 \text{ mg/m}^2/\text{day} \times 2.10 \text{ m}^2 = 126 \text{ mg/day}$

17. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give idarubicin hydrochloride  $12 \text{ mg/m}^2/\text{day} \times 3 \text{ days}$ .

Patient height: 60 in

Patient weight: 60 kg

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

a.  $60 \text{ kg} \times 2.2 = 132 \text{ lb}$

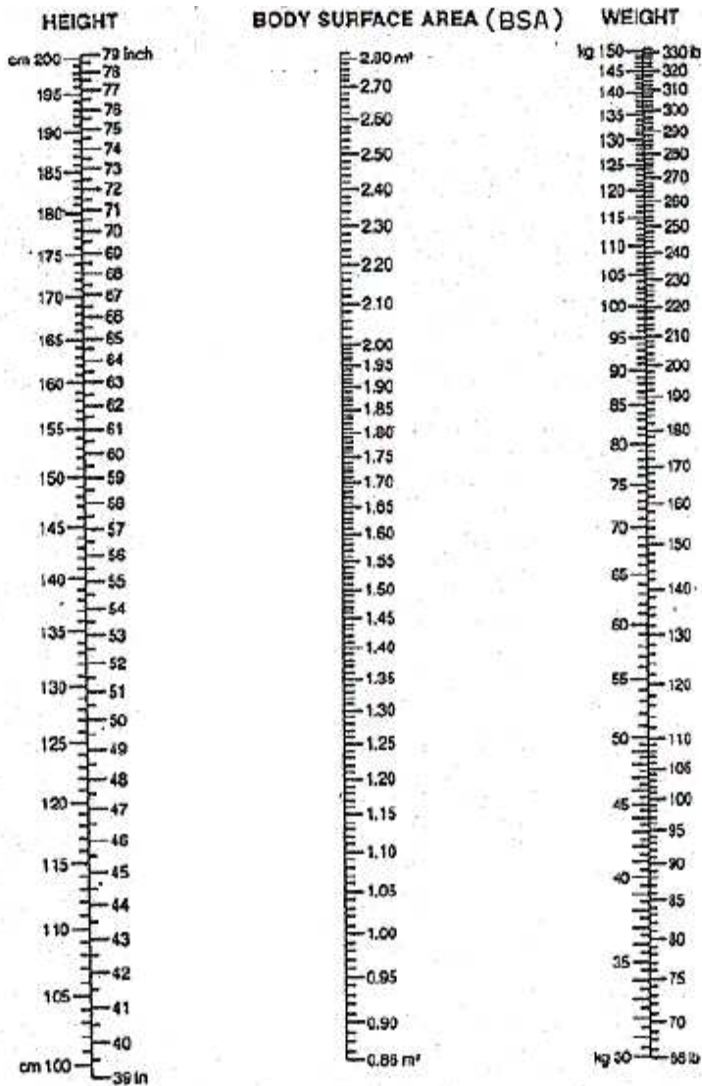
$$\sqrt{\frac{60 \times 132}{3131}} = \sqrt{2.53} = 1.59 \text{ m}^2$$

$12 \text{ mg/m}^2/\text{day} \times 1.59 \text{ m}^2 = 19.1$  or  $19 \text{ mg/day}$

b. Height 60 in, weight 60 kg, intersects  $1.60 \text{ m}^2$

$12 \text{ mg/m}^2/\text{day} \times 1.60 \text{ m}^2 = 19.2 \approx 19 \text{ mg/day}$

18. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



Give cytarabine  $100 \text{ mg/m}^2/\text{day} \times 7 \text{ days}$ .

Patient height: 64 in

Patient weight: 65 kg

What is the daily dose with

a. square root method?

b. nomogram?

ANS:

a.  $65 \text{ kg} \times 2.2 = 143 \text{ lb}$

$$\sqrt{\frac{64 \times 143}{3131}} = \sqrt{2.92} = 1.71 \text{ m}^2$$

$$100 \text{ mg/m}^2/\text{day} \times 1.71 \text{ m}^2 = 171 \text{ mg/day}$$

b. Height 64 in, weight 60 kg, intersects  $1.69 \text{ m}^2$

$$100 \text{ mg/m}^2/\text{day} \times 1.69 \text{ m}^2 = 169 \approx 170 \text{ mg/day}$$

19. Order: streptozocin  $1000 \text{ mg/m}^2$  in 100 mL D<sub>5</sub>W over 2 hours  
Patient's height and weight: 5 ft 2 in and 210 lb

Drug available: streptozocin 1 g powdered vial, reconstitute with 9.5 mL NS; yields 100 mg/mL

- What is the patient's BSA ( $\text{m}^2$ )?
- What is the total dose?
- How many milliliters should you prepare?

ANS:

- $\sqrt{\frac{62 \times 210}{3131}} = \sqrt{4.16} = 2.04 \text{ m}^2$
- $2.04 \text{ m}^2 \times 1000 \text{ mg/m}^2 = 2040 \text{ mg}$
- BF:  $\frac{D}{H} \times V = \frac{2040 \text{ mg}}{100 \text{ mg} \times 1 \text{ mL}} = 20.4 \text{ mL}$

20. Order: methotrexate  $3 \text{ mg/m}^2 \text{ PO} \times 2$  weekly  
Patient's height and weight: 5 ft 2 in and 130 lb  
Drug available: methotrexate tablets 2.5, 5, 7.5 mg
- What is the patient's BSA ( $\text{m}^2$ )?
  - What is the total dose?

ANS:

- $\sqrt{\frac{62 \times 130}{3131}} = \sqrt{\frac{8060}{3131}} = \sqrt{2.57} = 1.60 \text{ m}^2$
- $1.6 \text{ m}^2 \times 3 \text{ mg/m}^2 = 4.8 \text{ mg}$  or 5 mg tablet twice a week

21. Order: sargramostim  $250 \text{ mcg/m}^2/\text{day}$ , dilute in 50 mL and infuse over 2 hours  
Patient's height and weight: 5 ft 10 in and 285 lb  
Drug available: sargramostim 500 mcg/mL
- What is the patient's BSA ( $\text{m}^2$ )?
  - What is the total dose?
  - How many milliliters should you prepare?

ANS:

- $\sqrt{\frac{70 \times 285}{3131}} = \sqrt{\frac{19950}{3131}} = \sqrt{6.37} = 2.52 \text{ m}^2$
- $2.52 \text{ m}^2 \times 250 \text{ mcg/m}^2 = 630 \text{ mcg}$
- $\frac{630 \text{ mcg}}{500 \text{ mcg}} \times 1 \text{ mL} = 1.26 \text{ mL}$

22. Order: clofarabine  $52 \text{ mg/m}^2$  daily and infuse in 250 mL D<sub>5</sub>W over 2 hours  
Patient's height and weight: 5 ft 4 in and 115 lb  
Drug available: 20 mg/20 mL
- What is the patient's BSA ( $\text{m}^2$ )?
  - What is the total dose?
  - How many milliliters should you prepare?

ANS:

- $\sqrt{\frac{64 \times 115}{3131}} = \sqrt{\frac{7360}{3131}} = \sqrt{2.35} = 1.53 \text{ m}^2$

b.  $1.53 \text{ m}^2 \times 52 \text{ mg/m}^2 = 79.56 \text{ or } 80 \text{ mg}$

c.  $\frac{80 \text{ mcg}}{20 \text{ mcg}} \times 20 \text{ mL} = 80 \text{ mL}$