**Student Handout: Guided Practice**

Decimals to percents

1. Jane is performing oil level inspections on oil-fill substation transformers. The reading on the sight glass indicated 0.45 full. How would Jane report her findings as a percentage?

A. 4.5% full

B. 0.045% full

C. 45% full

D. 0.45% full

Finding the Unknown Percent

2. Matt and the line crew are pulling wire for an overhead system upgrade. They have 220 feet of wire to pull. After the first two hours, they had pulled 60 feet. Sixty feet is what percentage of the entire job? Round to the nearest tenth.

A. 45%

B. 27.3%

C. 36.6%

D. 30%

3. Cathy is restocking the line trucks. She has 150 wedge connectors and she is required to put 30 wedge connectors on each truck. Thirty is what percentage of 150?

A. 20%

B. 6%

C. 5%

D. 15%

Finding the Unknown Part

4. Jack and the crew are doing pole inspections. They have completed 25% of the 60 poles the crew has to inspect. How many poles has the crew inspected?

A. 30 poles

B. 15 poles

 C. 45 poles

D. 25 poles

5. Kerri and her crew are setting a new pole. The angle of the boom on the pole setting truck is at 45°, which limits the ability of the crane to pick up 60% of the entire 4,000- pound pole weight. What is the weight the truck can lift with the boom at a 45° angle?

A. 1,600 lbs

B. 1,800 lbs

C. 2,400 lbs

D. 4,000 lbs

Finding the Unknown Whole

6. John and his crew have to do thermal inspections on the connectors in a business development. The crew has completed 35%, or 63 connectors, as of their lunch break. How many total connectors does the crew have to inspect on this day?

A. 180 connectors

B. 103 connectors

C. 117 connectors

D. 85 connectors

7. Yolanda is performing hot stick inspections. She found 5%, or 8 sticks, either needed an expired inspection label or had cracks that would impact the safety of the crew. How many total hot sticks has Yolanda inspected?

 A. 100 sticks

B. 160 sticks

C. 40 sticks

D. 120 sticks

Independent practice:

8. Bill is checking the current transformers on an industrial meter. The proper reading should be 1 ampere. Bill found that the current transformer was reading 0.972 amperes. How would Bill report his findings as a percentage of the proper reading of 1 ampere?

A. 97.2%

B. 9.72%

C. 0.972%

D. 0.0972%

Finding the Unknown percent

9. Chuck has been asked to raise the plant spinning reserve to at least 200 MW to meet anticipated demand during the hot afternoon peak. His current spinning reserve is 120MW. By what minimum percentage must Chin increase spinning reserve?

A. 270%

B. 180%

C. 167%

D. 80%

10. Brett has been asked to dispatch 200 Megawatt-hours (MW-h) of energy to the transmission inter-tie substation during his current shift. Thus far, he has dispatched 30% of this amount. How much energy in MW-h remains to be dispatched?

A. 30 MW-h

B. 70 MW-h

C. 140 MW-h

D. 170 MW-h

11. Julio has been asked to raise the plant spinning reserve to at least 250 MW to meet anticipated demand during the hot afternoon peak. His current spinning reserve is 61% of this minimum amount. What is the current level of the spinning reserve in MW?

A. 189 MW

B.152.5 MW

C. 97.5 MW

D. 80 MW

12. Howard, a plant operator, has been asked to reduce his plant’s output from 100%, full power at 140 MW, to 120 MW as a large customer goes off-line for the weekend. What is the plant’s new output in percent? Round to the nearest percent.

 A. 86%

B. 14%

C. 108%

D. 120%

13. Tom and his line crew are looking for a fault in a direct buried cable leading to a home. The crew has completed 30%, or 36 feet, using the pin-pointer fault detection equipment. How many feet of the total cable will the crew be inspecting?

A. 61 ft

B. 108 ft

C. 51 ft

D. 120 ft

14. As the afternoon temperature and load both continue to rise, Tate realizes that he needs to rapidly increase the plant’s current spinning reserve from 60 MW by an additional 120% by bringing the combustion gas turbine peaking unit online. What would the total spinning reserve become, if there are no load changes, as the combustion gas turbine is brought online?

A. 72 MW

B.120 MW

C. 132 MW

D. 180 MW

15. Lily and her line crew are pulling wire for a new subdivision. The spool on the truck has 600 feet of primary copper wire. The crew used 28% of the spool in the morning. How many feet of wire did the crew use?

A. 432 ft

B. 214 ft

C. 386 ft

D. 168 ft

16. As the afternoon temperature and load both continue to rise, Victor realizes that he needs to rapidly increase the plant’s current spinning reserve by bringing the combustion gas turbine peaking unit online. The peaking unit will increase the current 60 MW of spinning reserve by an additional 130%. What additional spinning reserve in MW does the 130% represent?

A. 78 MW

B. 130 MW

C. 138 MW

D. 190 MW

**Answer Key**

**Note: Many times there are numerous ways to solve these problems. I have given you one way as an example.**

1. Jane is performing oil level inspections on oil-fill substation transformers. The reading on the sight glass indicated 0.45 full. How would Jane report her findings as a percentage?

A. 4.5% full

B. 0.045% full

**C. 45% full**

D. 0.45% full

To change .45 to a percentage, move the decimal two places to the right and add a percent sign.

Finding the Unknown Percent

2. Matt and the line crew are pulling wire for an overhead system upgrade. They have 220 feet of wire to pull. After the first two hours, they had pulled 60 feet. Sixty feet is what percentage of the entire job? Round to the nearest tenth.

A. 45%

**B. 27.3%**

C. 36.6%

D. 30%

60=n(220)

To isolate n, divide both sides by 220.

.2727 Move the decimal two places to the right and round to the nearest tenth. 27.3%

3. Cathy is restocking the line trucks. She has 150 wedge connectors and she is required to put 30 wedge connectors on each truck. Thirty is what percentage of 150?

**A. 20%**

B. 6%

C. 5%

D. 15%

30=n (150)

Divide both sides by 150.

30/150=.2 Move the decimal two places to the right and add a zero as a placeholder. 20%

Finding the unknown part

4. Jack and the crew are doing pole inspections. They have completed 25% of the 60 poles the crew has to inspect. How many poles has the crew inspected?

A. 30 poles

**B. 15 poles**

C. 45 poles

D. 25 poles

Change 25% to a decimal: .25. .25 x 60=n Multiply. .25 x 60=15

5. Kerri and her crew are setting a new pole. The angle of the boom on the pole setting truck is at 45°, which limits the ability of the crane to pick up 60% of the entire 4,000- pound pole weight. What is the weight the truck can lift with the boom at a 45° angle?

A. 1,600 lbs

B. 1,800 lbs

**C. 2,400 lbs**

D. 4,000 lbs

.60 x 4000=n Multiply. .60 x 4000=2400 lbs.

Finding Whole

6. John and his crew have to do thermal inspections on the connectors in a business development. The crew has completed 35%, or 63 connectors, as of their lunch break. How many total connectors does the crew have to inspect on this day?

**A. 180 connectors**

B. 103 connectors

C. 117 connectors

D. 85 connectors

Change 35% to .35

.35 x n=63 Divide both sides by .35.

63/.35=180

7. Yolanda is performing hot stick inspections. She found 5%, or 8 sticks, either needed an expired inspection label or had cracks that would impact the safety of the crew. How many total hot sticks has Yolanda inspected?

 A. 100 sticks

**B. 160 sticks**

C. 40 sticks

D. 120 sticks

Change 5% to .05

.05 x n=8 Divide both sides by .05

8/.05=160 sticks

Independent practice:

8. Bill is checking the current transformers on an industrial meter. The proper reading should be 1 ampere. Bill found that the current transformer was reading 0.972 amperes. How would Bill report his findings as a percentage of the proper reading of 1 ampere?

**A. 97.2%**

B. 9.72%

C. 0.972%

D. 0.0972%

Move the decimal two places to the right and add a percent sign: 97.2%

Unknown percent

9. Chuck has been asked to raise the plant spinning reserve to at least 200 MW to meet anticipated demand during the hot afternoon peak. His current spinning reserve is 120MW. By what minimum percentage must Chin increase spinning reserve?

A. 270%

B. 180%

**C. 167%**

D. 80%

10. Brett has been asked to dispatch 200 Megawatt-hours (MW-h) of energy to the transmission inter-tie substation during his current shift. Thus far, he has dispatched 30% of this amount. How much energy in MW-h remains to be dispatched?

A. 30 MW-h

B. 70 MW-h

**C. 140 MW-h**

D. 170 MW-h

100-30=70

70 percent is left to be dispatched. What is 70% of 200?

n=.70x200

n=140 (You could have found 30% of 200 and then subtracted that amount from 200MW-h.)

11. Julio has been asked to raise the plant spinning reserve to at least 250 MW to meet anticipated demand during the hot afternoon peak. His current spinning reserve is 61% of this minimum amount. What is the current level of the spinning reserve in MW?

A. 189 MW

**B.152.5 MW**

C. 97.5 MW

D. 80 MW

Change 61% to .61

.61 x 250=152.5

12. Howard, a plant operator, has been asked to reduce his plant’s output from 100%, full power at 140 MW, to 120 MW as a large customer goes off-line for the weekend. What is the plant’s new output in percent? Round to the nearest percent.

**A. 86%**

B. 14%

C. 108%

D. 120%

120=n x 140 Divide by 140 on both sides.

120/140=.85714 Move the decimal two places to the right to change the decimal to a percent. 85.7%

13. Tom and his line crew are looking for a fault in a direct buried cable leading to a home. The crew has completed 30%, or 36 feet, using the pin-pointer fault detection equipment. How many feet of the total cable will the crew be inspecting?

A. 61 ft

B. 108 ft

C. 51 ft

**D. 120 ft**

Change 30% to .30

36=.30 x n Divide both sides by .30

36/.30=120 ft.

14. As the afternoon temperature and load both continue to rise, Tate realizes that he needs to rapidly increase the plant’s current spinning reserve from 60 MW by an additional 120% by bringing the combustion gas turbine peaking unit online. What would the total spinning reserve become, if there are no load changes, as the combustion gas turbine is brought online?

A. 72 MW

B.120 MW

**C. 132 MW**

D. 180 MW

Change 120% to a decimal: 1.2

n=1.2 x 60

n=72 Since the combustion gas line brought an additional 72 MW, you must add the original 60 as well.

72+60=132 MW

15. Lily and her line crew are pulling wire for a new subdivision. The spool on the truck has 600 feet of primary copper wire. The crew used 28% of the spool in the morning. How many feet of wire did the crew use?

A. 432 ft

B. 214 ft

C. 386 ft

**D. 168 ft**

Change 28% to a decimal.

n=.28 x 600

n=168 ft.

16. As the afternoon temperature and load both continue to rise, Victor realizes that he needs to rapidly increase the plant’s current spinning reserve by bringing the combustion gas turbine peaking unit online. The peaking unit will increase the current 60 MW of spinning reserve by an additional 130%. What additional spinning reserve in MW does the 130% represent?

**A. 78 MW**

B. 130 MW

C. 138 MW

D. 190 MW

n=1.3 x 60=78 MW

**Exit Slip Answer Key:**

percent=part/whole

part=percent x whole

whole = part/percent